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ABSTRACT

This resource manual is designed to provide educators with timely information on the use of computers and related technology in schools. Section one includes a review of the new Bureau of Technology Applications' goal, functions, and major programs and activities; a description of the Model Schools Program, which has been conceptually derived from the paper "Effective Schooling, Reasoning, and Computer Technology"; and a series of perspectives and initiatives on the use of computers and technology written by staff from both the Office of Elementary and Secondary Education and the Office of School Improvement and Support. A department contact person is named for each department perspective. Section two is a compendium of descriptions of promising technology programs and practices in New York State schools. These descriptions also name contact persons. Section three includes a description of distance learning and profiles of distance learning planning and implementation projects that were funded in 1986-87 and 1987-88 under the Technology Network Ties (TNT)/Distance Learning Grant Program. Section four contains descriptions of National Diffusion Network (NDN) programs which use technology for instructional purposes. Section five is a glossary of words used frequently in these papers and project descriptions. (Author/DB)

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RESOURCE MANUAL ON THE USE OF COMPUTERS IN SCHOOLING

Developed by

Office of Elementary and Secondary Education
Planning, Testing and Technological Services
Division of Elementary and Secondary Education Planning
Bureau of Technology Applications

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Albany, New York 12234

March 1989

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This resource manual is designed to provide educators with timely information on the use of computers and related technology in schools. If questions arise as you use the manual, or if you have suggestions, please contact Dr. Steven J. Kidder, State Education Department, Chief, Bureau of Technology Applications, 860 EBA, Albany, New York 12234; (518) 486-6074.

The manual has five major sections, indicated by Roman numerals.

Section I includes a review of the new Bureau of Technology Applications' goal, functions, and major programs and activities; a description of the Model Schools Program, which has been conceptually derived from the paper "Effective Schooling, Reasoning, and Computer Technology"; and a series of perspectives and initiatives on the use of computers and technology written by staff from both the Office of Elementary and Secondary Education; and the Office of School Improvement and Support. A Department contact person is named for each Department perspective. These perspectives are offered to begin a dialogue on appropriate and comprehensive uses of computers and technology in schools.

Section II is a compendium of descriptions of promising technology programs and practices in New York State schools that were selected from submissions from schools, BOCES, and large city school districts across the State. These descriptions also name contact persons.

Section III includes a description of distance learning and profiles of distance learning planning and implementation projects that were funded in 1986-87 and 1987-88 under the TNT/Distance Learning Grant Program.

Section IV contains descriptions of National Diffusion Network (NDN) programs which use technology for instructional purposes.

Section V is a glossary of words used frequently in these papers and project descriptions.

An asterisk * will appear on a section indicating the information remains the same as in the 1986 Resource Manual on Computers in Schooling.

Enclosed in the pocket of the binder is a Resource Manual Evaluation Form. Please complete and return to Dr. Steven J. Kidder, State Education Department, Chief, Bureau of Technology Applications, 860 EBA, Albany, New York 12234.

PERSPECTIVES AND INITIATIVES ON THE USE OF COMPUTER TECHNOLOGY IN SCHOOLING

from the

Office of Elementary and Secondary Education

and the

Office of School Improvement and Support

Bureau of Technology Applications: Goal, Functions, and Technology Programs and Activities

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Office of Elementary and Secondary
Education Planning, Testing and Technological Services
Division of Elementary and Secondary Education Planning
Bureau of Technology Applications
March 1989

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Bureau of Technology Applications: Goal, Functions, and Technology Programs and Activities

The Bureau of Technology Applications is responsible for the effective implementation of computer, visual, and telecommunication technology applications within elementary and secondary schools and BOCES. Located within the Division of Elementary and Secondary Education Planning, the Bureau was created in August 1988 as a result of a Department Reorganization Task Force recommendation that Department offices should be responsible for developing programs and services to enable their constituencies to integrate technology within their respective programs and services.

This paper provides a brief description of the goal, functions, and current and planned activities of the Bureau of Technology Applications.

A. Current Status of Technology in the Nation's Schools

During the past decade, vast numbers of computers and a wide spectrum of interactive learning technology have been acquired by elementary and secondary schools throughout the nation. A recently published Office of Technology Assessment (OTA) report, "Power On! New Tools for Teaching and Learning", contains several observations about the current status of technology in schools.[1] Highlights include the following:[2]

- School districts wish to apply different technologies in support of curriculum and programs.
- Teachers must be effectively trained to use technology as a teaching tool. The provision of quality staff development programs will ensure that technology is effectively and efficiently applied to improve teaching and learning in the classroom.
- The quality of educational software needs to be improved and Federal, State and local governments must play a greater role in the development of software.

OTA also underscored several initiatives that could be undertaken at the Federal level to ensure that technology is used appropriately, creatively, and cost-effectively in schools in the future:[3]

- The need to reestablish long-term funding for technology programs.
- The need to support cost-effectiveness studies to justify large technology expenditures.
- The need to provide fiscal support for preservice and inservice programs for teachers.

- The need to stimulate development of innovative software.
- The need to increase Federal support for research and development.

The results of a recent Electronic Learning "Survey of the States" indicated that State Departments of Education are playing a greater role in planning and implementing educational technology today than in the previous decade.[4] Moreover, seventy-five percent of the States plan to embark upon new technology-related programs during 1988-89. Distance Learning, CD-ROM, videodisc, and laserdisc rank high on the list of new initiatives that are of interest to the States.

B. Acquisition and Use of Technology in New York State Schools

In New York State, there has been a similar trend in the increasing numbers of computers, video technologies, and television reception capacities acquired by schools during the previous decade.[5] For example, the total number of microcomputers in the State's schools dramatically increased from 69,684 units in 1984 to 154,461 in 1987. The percent of increase in units rose 18.7% in 1987 over the preceding year.

There has been a similar pattern of growth in the number of microcomputers per school. In 1984, there were 11 units per school. This number increased over 100% to 25 units in 1987.

New York State public schools have acquired large amounts of video and broadcast technologies as well. In 1987, there was a total installed base of 17,618 video recorders/players and 37,565 television receivers in the State's schools. The number of VHS-type recorders was 13,292, an increase of 22.4% over 1986. The number of color television receivers was 23,236, a 19% increase over 1986. There were 1,200 TV projection units, an increase of 24.9%.

Reception of public television by New York State public schools grew steadily from 1986 to 1987. There were 3,326 schools who were able to receive public television in 1987 (a modest 2.8% change in one year) and 2,302 schools with access to cable television (a 5.5% change from 1986). Sixty-four schools had acquired satellite dishes, representing a 30.6% change from the previous year.

C. Bureau of Technology Applications: Organizational Structure, Goal, and Functions

While technology has steadily advanced throughout New York State schools, it is important to continue to provide effective guidance at the State level to ensure that technology is appropriately integrated within and across the curriculum and is used to support Regents program priorities for elementary and secondary education.[6]

In August 1988, the State Education Department created a new Bureau of Technology Applications in response to a Department Reorganization Task Force recommendation that Program Offices should exercise a more decisive role in the planning and implementation of technology within their respective educational constituencies.

The Bureau of Technology Applications is organizationally structured within the Division of Elementary and Secondary Education Planning, Office of Elementary and Secondary Education Planning, Testing, and Technological Services.[7] The Bureau's goal and functions have been derived from the "Mission" of the Division of Elementary and Secondary Education Planning. This Division is responsible for supporting the major educational goals of the State Education Department--fostering equity and excellence--by fulfilling the following functions:[8]

- It is the mission of the Division of Elementary and Secondary Education Planning to apply (or assist other Department staff in applying) systematic and rational procedures of planning, systems analysis and evaluation to the delineation of problems, the gathering of information, and the analysis of decision alternatives. This mission includes the enhancement of the Department's overall management decision-making through the effective application of information and information technology, (including computer tools such as electronic databases and electronic networks).

- The Division's mission also includes identifying and helping to implement innovative educational practices involving current and emerging technology both within the Department and in schools. In order to accomplish this, the Division is responsible for providing leadership, information and knowledge to Department curriculum and program units, as well as to BOCES and school districts, in the use of technology for instructional management and instruction.

In light of this mission statement, the central goal of the newly created Bureau of Technology Applications is to provide direction, leadership and technical assistance in the planning and implementation of administrative and instructional applications of technology within BOCES, elementary and secondary public and private schools, and related educational and cultural institutions that serve the State's students, teachers, administrators, and parents.

The Bureau has identified six major functions for undertaking this supportive goal:

1. Policy and Administration. The Bureau will review and develop technology policies and regulations that address Program Office needs. The Bureau will be responsible for the management of major technology programs, such as

Technology Network Ties (TNT), Student Information System (SIS), and the Model Schools Program.

2. Planning. The Bureau will develop Statewide plans for the implementation of technology within schools and BOCES consistent with Program Office needs and will assist BOCES/schools on the development of their respective technology plans.

3. Research and Evaluation. The Bureau will identify and support the development of emerging technology applications that address Program Office needs. The Bureau will encourage BOCES and school districts to adopt appropriate evaluation procedures for assessing the impact of their technology projects.

4. Development. The Bureau will seek support for the establishment of pilot technology applications consistent with Program Office needs.

5. Dissemination. The Bureau will disseminate information on current and emerging technology applications (administrative/instructional) through a variety of mechanisms and consistent with Program Office objectives.

6. Technical Assistance and Field Activities. The Bureau will provide a variety of services and resources to enable Program Office units and field constituencies to effectively use technology.

D. Current Programs and Supporting Fiscal Resources

All current and emerging programs and services of the Bureau are derived from a foundation of technology programs that have been developed to support management, instructional support, and instruction within New York State's elementary and secondary schools and BOCES. These programs include:

Technology Network Ties (TNT): A Statewide program integrating computer hardware, software and communications technologies in a comprehensive network of school districts, BOCES, libraries, other educational agencies and the State Education Department.

Student Information System (SIS): The development and implementation of a comprehensive, computer-based Student Information System in each of the Big Five Cities.

Comprehensive Instruction and Management System (CIMS): An approach to education that includes the development of a curriculum or set of clearly stated learning outcomes; assessment instruments to measure student progress through the curriculum; and a set of teaching-learning strategies and staff development for teachers and administrators.

The Model Schools Program: A systematic approach to planning and integrating current and emerging technology within the curriculum that (1) demonstrates the extent to which technology can improve the effectiveness of instruction, and (2) explores how technology influences curriculum, school organization, and operations.

The TNT/Distance Learning Program: An exploratory program that has provided grants to BOCES and school districts to plan for and implement distance learning pilot projects that respond to Regents and Program Office priorities.

Fiscal resources provided during 1988-89 that directly support these programs and recommended budget allocations in the Executive Budget for 1989-90 are as follows:

	Current Expenditures 1988-89	Executive Budget Recommendations 1989-90
TNT	$ 5,000,000	$4,500,000
SIS	9,000,000	9,000,000
CIMS	5,500,000	5,500,000
Model Schools	350,000*	
TNT/DL	325,000**	
Hardware Aid	9,300,000	9,480,000
Software Aid	8,300,000	9,120,000

*Model Schools is funded out of combined resources from TNT and CIMS. It is intended that these resources will be available for FY 1989-90.

**Distance Learning was funded out of TNT resources for 1987-88. Due to delayed budget approval, a program was not offered in FY 1988-89, although it may be offered in 1989-90.

The Bureau of Technology Applications' major administrative responsibilities include:

- Effective and efficient management of these programs and resources.
- Ongoing development of these programs and enhanced articulation among these resources.

Current Statewide activities in each of these program areas that are administered by the Bureau include the following:

Management

- Statewide data collection effort. Program to electronically obtain State required data from school districts electronically; reducing paperwork burden on school districts, increasing the timeliness and reliability of the data. Data collection will be primarily a by-product of information maintained by school districts for their daily management of administrative and student affairs. During 1988-89, approximately 600 school districts participated in the transmission of attendance and financial data to the State Education Department.

- PROFS implementation. Program to provide a mechanism of electronic communication and transfer of information among school districts, BOCES and the State Education Department.

- Application development. New software for management and instructional support to be used by school districts.

- Decision support applications. Use of TNT computer software by school district administrators and teachers to assist in the development of management and instructional decisions.

- System maintenance. Monitoring and maintenance of databases, software, Statewide and regional networks; including maintenance of system security Statewide.

Instructional Support

- Training. An extensive series of activities to educate school district staff on the use of the network and the various software applications (administrative and instruction). Additionally, training of technical personnel in order to maintain the hardware, software and telecommunications system regionally and Statewide.

- Library integration. Planning for the use of the TNT network by public and school libraries.

- CoSy conferencing. Groups of educators now have TNT-based computer conferencing capability.

- Youth-at-Risk (YAR) database. An Electronic Clearinghouse of literature and, a database of Youth-at-Risk programs and resources. Additionally, electronic mail and CoSy computer-based conferencing is provided to all Youth-at-Risk Site Administrators across the State.

- The Comprehensive Instruction and Management System. CIMS continues to provide systematic curriculum development and implementation in mathematics, science, English, and social studies education and the TNT network is being used to facilitate these activities.

Instruction

- o Distance learning grant program. A competitive grant program which has provided funding for 18 projects during 1986-88.

E. Developing Projects and Activities

The Bureau of Technology Applications currently manages or is undertaking the following programs, projects, and activities within each of its six functional areas.

1. Policy and Administration

- o Develop policies, legislation, and regulatory amendments that support Regents, Commissioner, and Office of Elementary and Secondary Education priorities for education and the role of technology in schools and BOCES.

A recent example is the January 1989 Board of Regents unanimous approval of the following policies that will guide the collection and analysis of data through the TNT and SIS systems:

  - oo Require school district planning for management and instructional support uses of technology.
  - oo Support TNT, SIS (including Part 200) and related standards as the foundation for State system.
  - oo Endorse use of TNT and SIS (including Part 200) to support district decision-making for both management and instruction.
  - oo Direct that TNT be used to expedite electronic data collection.
  - oo Endorse statewide database using SIS to provide individual student data.
  - oo Direct SED to develop security policies/procedures to assure confidentiality of statewide database.
  - oo Support prosecution of violators of security policies/procedures.

- o On-going management of TNT, SIS, CIMS, Model Schools, the Media Distribution Center and the TNT/Distance Learning Program.

- Review, approve, and monitor Special Legislative Technology grants, COSERs, and BOCES 793 Long Range Plans for computer services.

2. Planning

- Development of a draft discussion paper, "Strategic Directions for the Instructional Use of Technology in New York State Schools" (February 1989) for review with Department and field staff.

- Development of long-range plans to guide the integration of instructional technology and ongoing statewide implementation and/or replication of TNT, SIS, CIMS, and Model Schools.

- Development of a regionally-delivered planning model on instructional uses of technology for local school districts in cooperation with BOCES, Teacher Resource and Computer Training Centers, and school districts and replication of the planning model within the Model Schools Program in cooperation with the BOCES Instructional Computer Coordinators and Teacher Resource and Computer Training Centers.

3. Research and Evaluation

- With the commercial sector, research institutions, and field constituencies, identify current and emerging technology applications for administrative and instructional purposes that address Regents/Program Office priorities, such as comprehensive school improvement, enhancement of teaching as a profession, and effective management of schools.

An example of this activity that holds significant potential for providing an important research foundation to guide the application of new technologies within the teaching/learning process is the recent Federally-funded Center on Technology in Education (CTE), which is a consortium of four institutions: Bank Street College as prime contractor; Bolt, Beranek and Newman; Brown University; and, Harvard University. CTE will receive approximately $1 million per year over a five year period to synthesize research on technological innovation, to develop a methodology for undertaking design experiments (teaching/learning environments), and to begin to construct a systematic science of how to design educational environments for the introduction of new technologies. Twelve areas of research will be addressed and there are deliverables for each year of the project. Commissioner Sobol provided a letter of support for the CTE proposal. Also, selected New York State schools (and others throughout the nation) will serve as pilot sites for research activities undertaken by CTE.

The Bureau of Technology Applications has established linkages with the Center and will keep abreast of developments in this arena and their potential implications for enhancing the use of new technology within and across the school curriculum.

4. Development

- Expand Department utilization of the Bureau's computer-based decision-support system for the Youth-at-Risk program that shows all related services in the county in which the program operates and develop a Youth-At-Risk data base of human/material resources, program descriptions (Federal/State-funded), and bibliography and initially provide on-line access for 56 Youth-At-Risk site administrators.

- When requested, collaborate with Department units and field constituencies on the development of proposals to seek outside funding at the State and Federal levels to provide incentives to schools to utilize technologies to develop new forms of organization and instructional practice which may enhance student learning.

A recent example is the preparation and submission of a proposal to establish a "Technology-Based Staff Development Program for Middle Level Science Teachers" that was submitted on January 3, 1989 under the Projects to Promote the Effective Use of Technology in the Teaching of Science and Mathematics Program Solication to the National Science Foundation. The preliminary proposal was cooperatively developed by the Bureaus of Technology Applications and Science Education and is a three year program with a proposed budget of approximately $300,000 per year.

- Forge partnerships with the Federal Star Schools distance learning programs to benefit schools throughout the State and encourage BOCES to assess the potential benefits of these projects for supporting Regents/Program Office priorities.

Bureau of Technology Applications staff contacted each of the four national Star Schools projects, gained their interest and support for establishing New York State demonstration/reception pilot projects, and has recently shared profiles of the projects with the field.

- Continue development and replication of the Model Schools Program.

Bureau of Technology Applications staff have begun to explore with staff of School District Organization the possibility of developing an "activity code" and replication plan to allow BOCES/Regional Computer Centers to replicate and provide ongoing support for the Model Schools Program to their component school districts as a cooperative shared service aid activity.

- o Continue development and further replication throughout the State of the SIS program and the Automate the Schools Program in New York City for the provision of information management capabilities for schools in need of assistance and in support of local schools' efforts to develop their Comprehensive School Improvement Plans.

5. Dissemination

- o Disseminate information on a variety of technology initiatives that directly support Regents/Program Office priorities.

- o Use the following electronic/nonelectronic media and methods for disseminating information:

  - oo conference presentation
  - oo video programming
  - oo electronic conferencing - via TNT
  - oo electronic clearinghouse - via TNT
  - oo electronic E-mail - via TNT
  - oo Bureau of Technology Applications newsletter
  - oo publications
  - oo papers

- o Specific foci of the dissemination function will include:

  - oo Information on effective/appropriate administrative/instructional technology applications that support continued implementation of the Regents Action Plan (1984).

  - oo State-of-the-art technology applications that address school problems.

  - oo Model technology programs that effectively address "at-risk" student needs.

  - oo Effective models of the use of technology to enhance the teaching/learning environment (in cooperation with Teacher Resource and Computer Training Centers).

- Continue the dissemination of curriculum-based video programming to schools through the Media Distribution Center. The Media Distribution Center currently acquires 60-70 new programs per year and distributes approximately 6,000 video programs to school districts, BOCES, and educational constituencies on a cost-recovery basis.

Bureau of Technology Applications staff have recently begun publication of *Technology Applications Quarterly*, a newsletter that will provide timely information on technology initiatives pertaining to the following:

- Department news
- BOCES
- School District news
- Telecommunications
- Teacher Resource and Computer Training Center's initiatives
- Curriculum
- Youth-at-Risk
- TNT/SIS/Model Schools Program
- CIMS
- Teachers and computers
- Vendor/hardware/software news

6. Technical Assistance and Field Activities

- Serve as a liaison to several statewide organizations to ensure that Department and field technology initiatives are well articulated.

Specific Statewide organizations with whom the Bureau will interact on a variety of collaborative initiatives include:

  - New York State Association for Computers and Technology in Education
  - New York State School Boards Association
  - BOCES Regional Information Center
  - BOCES Directors of Educational Communications
  - Others

- Maintain liaison with Teacher Resource and Computer Training Centers.

NOTES

[1] Power On! New Tools for Teaching and Learning, Congress of the United States, Office of Technology Assessment, Washington, D.C., U.S. Government Printing Office, September 1988.

[2] Charp, Sylvia, "An Editor's View of the OTA Report", T.H.E. Journal, Dec./Jan., 1988-89, p. 73.

[3] *Ibid.*, pp. 73-74.

[4] Bruder, Isabelle, "Electronic Learning's 8th Annual Survey of the States, 1988", Electronic Learning, October, 1988, p. 38.

[5] Data provided by the new York State Education Department Information Center on Education, Basic Educational Data Systems (BEDS), School Data Form Survey, Fall 1987.

[6] Priority Activities of the Regents and the State Education Department 1988-89, The University of the State of New York, The State Education Department.

[7] Former Office of ES&C Education Planning and Support Services.

[8] "Mission Statement", Division of Elementary and Secondary Education Planning, January 1989.

Office of Elementary and Secondary Education

Office of Elementary and Secondary Education Planning, Testing and Technological Services

Division of Elementary and Secondary Education Planning

Office of Elementary and Secondary Education
Planning, Testing and Technological Services
Division of Elementary & Secondary Education Planning

TECHNOLOGY NETWORK TIES (TNT)

Description of Project Goals/Objectives:

To develop a Statewide information system and telecommunications network to permanently link the State Education Department, Boards of Cooperative Educational Services and School Districts for administrative and instructional purposes.

Target Audience:

Primarily BOCES and school districts with intentions to involve administrators, teachers and eventually students.

Department Contact Person:	Denis J. Martin New York State Education Department Division of E&S Education Planning Room 865 EBA (518) 474-2380
Field Contact Person:	BOCES Regional Information Center Directors

Scope Notes:

Technology Network Ties is a key Statewide program with strong Education Department and legislative support. The purpose of TNT is to develop a comprehensive, Statewide program integrating computer hardware, software and communications technologies in a network linking school districts, BOCES, libraries and other educational agencies with the State Education Department. TNT is being built around the present and future capabilities of information technology, particularly communications network and database technology.

As it is being built, TNT provides critical benefits at all levels of the State education system. These include:

- Providing more equitable access to and sharing of management applications and instructional services in schools. By taking a Statewide development approach, cost-effectiveness and overall efficiency are being maximized.
- Providing technology and services that will support information management and decision-making by teachers, school districts, and BOCES. These systems will help provide program accountability in schools.

- Providing complete and rapid electronic reporting of data to the State. Through the TNT network and its standardized systems, data used for decision-making and planning throughout the State is being made more available, consistent and accurate.
- Piloting new modes of instructional delivery and the management of student progress such as computer assisted interactive instruction, distance learning and computer conferencing.

Currently, the network links nine Regional Information Centers and New York City. The project has many activities underway providing the benefits described above. Specific objectives for the upcoming year include:

- Expanding electronic data collection activities via the network. These activities build on successful collection procedures with over 450 school districts last year.
- Establishing a Statewide electronic mail and document distribution facility providing services to schools and BOCES throughout the State. Currently, every BOCES District Superintendent is on the network for "e-mail". In addition, most BOCES Regional Information Centers will be offering electronic mail via TNT as service to districts in the upcoming year.
- Continuing development and in-district testing of the new financial and student systems.
- Focusing on the decision support tools and facilities provided by and supported on TNT and its associated systems. This will include providing access to TNT based data and services for a wide range of users.
- Expanding the instructional developments and instructional support potential of TNT by replicating activities of the Model Schools Program in other parts of the State and expanding projects using computer conferencing by making them available on TNT.

The TNT program is establishing a common, complete, Statewide technology-based infrastructure for information management throughout all levels of the education system. The network and services being established by the TNT program will become increasingly integral to the New York State Education system. Management and instructional activities are expanding at a fast rate and the network will reach into every school building in the State in the near future. The benefits that are currently provided by TNT only scratch at the surface of the potential created by the innovation of the TNT program.

Office of Elementary and Secondary Education
Planning, Testing and Technological Services
Division of Elementary and Secondary Education Planning

COMPREHENSIVE INSTRUCTIONAL MANAGEMENT SYSTEM (CIMS)

Description of Project Goals/Objectives:

State-funded grants are awarded to large cities and regional consortia of school districts for the development and subsequent replication of curricula, matching assessment, exemplary instructional materials, staff development, and computer-generated reporting in the content areas of mathematics, reading/communication arts, science, and social studies.

Target Audience:

Students, teachers, and principals in grades K-9 for mathematics, grades K-8 for communication arts, and grades K-6 for science and social studies.

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Scope Notes:

CIMS projects promote local instructional program management and ongoing improvement through cooperation and sharing which result in curricula that are congruent with State syllabi and staff development for teachers and administrators in the use of the CIMS curricula, assessment instrumentation, and instructional support resources. Computerized reporting provides teachers with organized information for diagnostic and instructional management purposes and provides administrators with information on student outcomes and instructional resource distribution.

Office of Elementary and Secondary Education Planning, Testing
and Technological Services
Division of Elementary and Secondary Education Planning

ELEMENTARY AND SECONDARY EDUCATION PLANNING LOCAL AREA NETWORK

Description of Project Goals/Objectives:

The E&S Local Area Network (or "LAN") currently connects over 60 IBM-compatible micro-computers within the Office of Planning, and supports a variety of applications for over 60 office professionals and support personnel.

It is primarily an administrative system, used for office automation purposes within the Office of Planning. However, software applications in use within Model Schools are also available and maintained on the system. Selected educational software is made available to office professionals for evaluation purposes.

Target Audience:

E&S Planning professional and support staff.

Department Contact Person:

John T. Temps
New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 474-2380

Field Contact Person: None

Scope Notes:

The major components of the system, as of 2/6/89, are:

3	non-dedicated system servers
62	workstation PCs (IBM, Compaq, Sperry, AT&T, Leading Edge)
6	user-owned remote workstations (IBM, Bentley, Leading Edge, clones)
4	asynchronous communications servers (shared modems)
12	ports to IBM mainframe (TNT)
14	shared printers
4	gateways to remote networks

Operating System: Waterloo PORT
Topology: ARCnet
Major DOS software: WordPerfect, dBASE, Lotus 1,2,3

Utilization statistics for 1988:

Network logins	20,008
Mail messages	44,501
Modem calls outgoing	1,528
Modem calls incoming	475
Mainframe connects	2,140
Shared data files	3,430

Bureau of Technology Applications

THE MODEL SCHOOLS
PROGRAM

Goal, Objectives, Program Activities

Office of Elementary and Secondary
Education Planning, Testing and Technological Services
Division of Elementary and Secondary Education Planning
Bureau of Technology Applications
March 1989

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THE MODEL SCHOOLS PROGRAM

A. Introduction

During 1985-86, the New York State Legislature, the State Education Department (SED), the Madison-Oneida BOCES and seven school districts in Central New York State established the Model Schools Program to demonstrate the extent to which computer technology could improve the effectiveness and efficiency of instruction in elementary and secondary schools. The Program also explored how computer technology influences curriculum, school organization and operation.

The Model Schools Program serves as the instructional component of the Technology Network Ties (TNT) Program. Model Schools teachers and students will learn to construct and query large common instructional databases, as well as, directly benefit from electronic mail and conferencing via TNT.

Currently 22 school districts are assuming full training and implementation of the Model Schools Program goal and objectives. Curriculum-referenced use of technology is focal to schools participating in Model Schools. Consequently to provide a baseline understanding by teachers across New York State for the appropriate methods of integrating technology into classroom settings, it is necessary to extend a strategic planning model for the replication of the Model Schools Program. Planning replication by Regional Information Centers, cooperating school districts, and teachers, will ensure a minimum standard of comprehensive technology use across the State. As described below, Tier I objectives allow for the initial training of teachers in application software for direct use in a classroom setting. Tier II training enables teachers to promote higher level development of lessons and the exploration and use of new technologies to attain curricular objectives. All training and products include technology-enhanced lessons, manuals and procedural guides. These materials are distributed among Model Schools districts and directly benefit students. Queries Unique and Easy for Students and Teachers (QUEST), a menu designed to interface with lesson plans stored in electronic form, has been developed to provide teacher and student access to and sharing of lessons by subject area.

B. Model Schools Program: Goal and Objectives

The major goal of the Model Schools Program is to help teachers learn how technology can be applied to classroom instruction.

Mechanisms for securing an acceptance factor and comfort level among teachers (K-12), who want to use technology in a positive way to enhance instruction are gained through commitment to the Model Schools Program, planning, affiliated training, staff development, technology-enhanced curriculum development and telecommunications. Replication for this technology-based program assures tool-software training and subsequent lesson plan development to be a benchmark for effectively creating a highly motivational and complete methodology for classroom learning.

The five primary objectives of the Model Schools Program are as follows:

I. Planning

Statewide replication of the Model Schools Program requires Regional Information Center facilitation to encompass:

- o district planning and awareness;
- o selection of qualified districts equipped with technology spanning K-12 grade levels;
- o technology-enhanced training and application workshops;
- o Model Schools coordination requirements;
- o telecommunication access to TNT/PROFS for administrative coordination;
- o telecommunication access to TNT/CoSy conferencing for teacher-based committee work; and,
- o on-going evaluation to document program impact.

II. Technology-Enhanced Curriculum Integration

a. To incorporate "tool software" applications effectively within the instructional process.

b. To identify and explore new technologies to enhance the instructional setting and address the needs of all student populations.

c. To develop lessons which incorporate instruction in the use of computers and other technology, spanning subject areas.

III. Staff Development

To design and deliver staff development strategies and programs which most effectively and efficiently train teachers to apply appropriate technology to classroom instruction.

IV. Telecommunications

To enable electronic communications and reporting among educators and students via computer conferencing forums, electronic mail and on-line database service.

V. Program Evaluation

To determine the levels of competence in computer use and the levels of understanding of computers which students should be able to achieve at various grade levels and subjects.

C. Model Schools Program Activities

During the period in which the Model Schools Program was developed and pilot tested (1985-1988), many processes and products supporting replication were completed. A brief description of these activities, beginning with a planning activity for statewide replication of the Model Schools Program and culminating with evaluation activities, follows for each of the five major program objectives.

I. Planning

Statewide replication of the Model Schools Program requires Regional Information Center facilitation to encompass:

- **district planning and awareness;**
- **selection of qualified districts equipped with technology spanning K-12 grade levels;**
- **technology-enhanced training and application workshops;**
- **Model Schools coordination requirements;**
- **telecommunication access to TNT/PROFS for administrative coordination;**
- **telecommunications access to TNT/CoSy conferencing for teacher-based committee work; and,**
- **on-going evaluation to document program impact.**

a. Planning for Replication of the Model Schools Program

The plan for replicating the technology-based Model Schools Program will incorporate the following variables assigned to participating RIC's, districts and respective staff.

1. Participation Criteria of BOCES Regional Information Centers (RICs)

    - The Model Schools Program will be replicated by Regional Information Centers (RICs).
    - The Model Schools Program RIC staff will undergo training at the Madison-Oneida BOCES.
    - It is assumed that access and availability of computers for teachers and students will be a minimum requirement for eligibility of a district to participate.
    - The RIC replication sites must:
        - Commit to staff development and training to support Model Schools Program objectives.

5

  - oo Use telecommunications as a main vehicle for coordination.

  - oo Provide Model Schools Program Awareness Sessions for potential participating districts.

  - oo Complete a needs assessment for potential participating districts.

  - oo Identify Model Schools Program participating districts, site administrators, curriculum committee chairpersons.

- o A Model Schools CIMS coordinator should be identified to coordinate the development of technology-enhanced CIMS lessons and provide technical assistance to CIMS districts. The Model Schools Program/CIMS coordinator will:

  - oo Attend preliminary training sessions.

  - oo Review new technology-enhanced CIMS lessons.

  - oo Adhere to Model Schools objectives.

  - oo Communicate with teachers via telecommunications.

  - oo Work cooperatively with CIMS management to secure on-going curriculum validation.

- o RICs will participate in Statewide Planning Forums for cohesive operations.

2. Participation Criteria of School Districts

- o Following awareness and selection as a potential participant, the district will complete a needs assessment for the RICs.

- o Demonstrate appropriate K-12 configuration of technology.

- o The district will submit a plan committing to the Model Schools goal, objectives, and activities.

b. Development of a Comprehensive Model Schools Technology Plan at the School District Level

An initial and central planning activity will be the development of a comprehensive plan by participating local school districts for integrating current and future technology applications within the instructional process. Elements of the Model Schools plan will include the planning and development of needs statements, program objectives, program activities, evaluation, inservice activities, and project continuance.

c. Development of Plans for Specific Activities

Tier I activity includes the initial introduction of teachers to tool-software training in word processing, spreadsheet and database technology. In addition, teachers will define areas of curriculum which can be presented more effectively with technology-enhanced lessons. This investigation and application will span all subject areas (K-12).

Tier II activity will accentuate higher level techology application. Teachers will determine an appropriate fit for new technologies in delivering and enhancing instruction, once they have demonstrated the knowledge and application of Tier I activity. Lessons will be developed that feature the use of new technology to fulfill objectives, such as Interactive video.

Tier III activity will provide on-going strategies planning for replication of the Model Schools Program in New York State. The SED facilitator and Model Schools coordinators at all replication sites will meet to provide a forum for coordinating Model Schools Program objectives and develop a national model for the effective use of technology in the classroom.

Plans will be developed to guide the implementation of the following specific program activities that will be undertaken during Tier I, Tier II, or Tier III:

Tier I

- Planning and conducting of a staff development program that will provide 50% (minimum/15 hours) tool-software training for K-12 teachers for instructional enhancement spanning curricular areas as identified in the Regents Action Plan.

- Planning for the use of Assistant Series and/or Appleworks packages for designing word processing, spreadsheet, database and graphing applications.

- Submission of intradisciplinary, technology-enhanced lesson plan models (2 lesson plans per teacher).

- Through the curriculum committee, development and submission of technology-enhanced lesson plans in the areas of reading/writing, art, technology, and special education (2 lesson plans per teacher).

- Development of a plan for the use of PROFS and CoSy by SED Model Schools Coordinator and all Site Administrators and Committee Chairpersons to ensure effective program coordination.

Tier II

- Planning for the development and submission of higher level tool-software applications and training, such as the use of interactive video for science and art and desktop publishing for English (2 lessons per teacher).

- Development of a plan for and actual utilization of Regional and Statewide telecommunications use for project coordination and teacher and student forums.

- Design and development of discipline-based presentation models for demonstration.

- Development of a plan to enhance educator awareness of the program through newsletter and regional publicity.

- Development of a plan for and actual conducting of regional piloting of technology-enhanced lessons, K-12th grades.

Tier III

- Ongoing Statewide planning in accordance with TNT directives.

- Planning for the development and submission of regional products to be included in Statewide Database (QUEST).

- National presentations of technology-enhanced learning models.

- Development of a plan to enhance educator awareness of the program at the national level through telecommunications, publications, and awareness of presentation models.

d. Ongoing Strategic Planning

A Statewide Model Schools Program Planning Committee will be established consisting of an SED facilitator and all Model Schools Project Coordinators. There will be four scheduled meetings annually.

Key activities that will be undertaken and addressed in strategic planning include the following:

- TNT coordinators will develop procedures for storing and accessing Model Schools technology-enhanced lessons on the network.

- Demonstration models will feature exemplary lessons and Model Schools products for educational organizations and forums.

- Telecommunications will afford planning strategies for administrator, teacher, student and parent activities.

- Product sharing will take place as a result of training and lesson plan development. Lessons will be distributed throughout Model Schools districts for classroom use. A Statewide database for sharing these curricular materials will be provided through TNT.

- Vendors will be expected to publicize and support the work of the statewide Model Schools Program.

II. **Technology-Enhanced Curriculum Integration:**

a. **To incorporate "tool software" applications effectively** ***within the instructional process.***

b. **To identify and explore new technologies to enhance the instructional setting and address the needs of all student populations.**

c. **To develop lessons which incorporate instruction in the use of computers and other technology, as exemplified by the applications of wordprocessing for learning to write, and computers for problem-solving and retrieving information.**

The following curriculum integration activities will be undertaken at each of the Tier I, II, and III levels:

a. Tier I Activities

- Training will be offered in the use of the Assistant Series, Microsoftworks, and/or Appleworks packages for wordprocessing, spreadsheet, database and graphing applications.
- Submission of intradisciplinary, technology-enhanced lesson plan models (2 lesson plans per teacher).
- Curriculum committee activity highlighting technology-enhanced work in the areas of reading/writing, art, technology, special education (2 lesson plans per teacher).

b. Tier II Activities

- Development of higher level tool-software application and training, such as the use of interactive video for science and art and desktop publishing for English (2 lesson plans per teacher).
- Development of discipline-based presentation models for demonstration.
- Refinement and regional piloting of technology-enhanced lessons, K-12th grades.

c. Tier III Activities

- Discussion and submission of regional product development to be included in Statewide Database (QUEST).

d. Curriculum Specific Projects

In addition to the on-going committee work, examples of curriculum integration activities for content areas include (see attachments for detail):

Reading/Writing Committee

Teachers will develop technology-enhanced lessons in language arts K-6 and journalism 9-12.

Student writing and publishing will continue throughout K-12.

A newsletter featuring student compositions will be produced quarterly.

Technology Education Committee

Teachers will explore and correlate Autocad, Autosketch and Fishertechnik with 7-12 curriculum objectives.

Assembly line simulations, mechanical drawing and model production lessons will be developed.

Special Education Committee

Teachers will correlate software and adaptive devices for specific learning activities to help learning disabled students.

Institute for Scientific Information (Microworks)

Model Schools Program teachers will use these technology-enhanced lessons in the areas of English, social studies, science and mathematics for grades 7-9.

Apple Learning Series Pilot

Model Schools Program teachers will critique and use correlated computer software in the areas of primary Language Arts and middle school Life Science classes.

e. CIMS Integration

In addition to these specific curriculum integration activities across K-12 content areas, Model Schools teachers with a working knowledge of tool-software applications and training in the CIMS Mathematics and Science curriculums have developed Apple and IBM technology-enhanced versions of CIMS lessons during the Model Schools pilot phase. Development and training is an on-going Model Schools objective. CIMS Statewide representatives have been trained by Model Schools to provide on-going validation of Model Schools materials for use by CIMS teachers.

Lessons developed by Model Schools teachers will be validated and distributed commensurate with joint CIMS/Model Schools Program pilot and training requirements.

Teachers will continue to modify CIMS technology-based lessons for Special Education student populations.

The Model Schools replication sites will commit to providing a CIMS facilitator to coordinate the validation and distribution process of new technology-based CIMS lessons.

III. **Staff Development: To determine, design, and deliver the staff development strategies and programs which most effectively and efficiently train teachers to apply appropriate technology to their practice.**

An initial major staff development activity will be the selection of program coordination staff and the provision of effective staff development for Model Schools Program facilitators.

Program coordination staff positions and descriptions of their responsibilities include:

a. Selection of Staff

The selection of knowledgeable, key staff assures the continuity of planning for effective coordination:

- o 1 Model Schools Program Coordinator/10 Districts
- o 1 Reading & Writing Committee Chairperson
- o 1 Art Committee Chairperson
- o 1 Technology Committee Chairperson
- o 1 Special Education Committee Chairperson
- o 1 Site Administrator Per District
- o 1 Regional CIMS Coordinator

b. Description of Staff

Duties, expertise and communication skills are crucial to achieving project goals.

The Model Schools Project Coordinator will:

- o Provide district awareness and oversee replication process.
- o Initiate planning and budget allocations.
- o Provide committee monitoring.
- o Realize project training and timelines.

- Officiate at site administrator's meetings.
- Coordinate the approval and distribution of technology-enhanced lesson development within the region.
- Participate in telecommunication activity for project (PROFS/CoSy).
- Attend Statewide project meetings.
- Assume responsibility for all correspondence, publicity and publications.
- Maintain contact with District Superintendents of participating BOCES to communicate and facilitate project progress.

The RIC CIMS Coordinator (Math & Science) will:

- Acquire knowledge of tool software.
- Acquire training in Model Schools Program/CIMS Math and Science applications.
- Provide turn-key training for teachers in CIMS Districts, in the use of Model Schools Program/CIMS Lessons (1 year pilot commitment).
- Encourage development of technology-enhanced CIMS lessons.
- Approve and submit lesson development to Model Schools Program Coordinator.
- Encourage the development of CIMS Presentation Models for regional and Statewide forums.

The Site Administrator will:

- Acquire knowledge of tool software.
- Acquire training for integrating "tool software" into curricular areas.

- Develop plans commensurate with Model Schools Program project goals.
- Assure district compliance with project goals and required submissions.
- Oversee day-to-day project activities in district.
- Report on district project progress at Site Administrator Meetings with SED and BOCES Project Coordinators.
- Oversee product refinement and submission of lesson plans and management documents in accordance with Model Schools Program format.
- Maintain contact with Superintendent and district administrators to communicate project progress.
- Facilitate turn-key training and curriculum development.
- Extend technical support for project participants.
- Participate in Model Schools Program telecommunication forums.
- Attend Model Schools Program Project Site Administrators Meetings.

The Committee Chairpersons will:

- Acquire knowledge of tool software.
- Acquire disciplinary application training.
- Coordinate meetings in conjunction with Model Schools Program Project Coordinator.
- Provide turn-key training and application in appropriate areas of Reading and Writing and Language Arts.
- Submit technology-enhanced lesson plans to Model Schools Program Project Coordinator (2 lesson plans per committee member).

- Develop presentation models for regional, Statewide and National demonstrations.

- Participate in appropriate Model Schools Program telecommunication conferences.

c. Model Schools Facilitator Staff Development Program

Training for the facilitators of the Model Schools Program will take place at BOCES. Focus of Year I Training will be on the Tier I objectives of the project. During the Spring of 1989-Summer 1989, there will be ten days of workshops for task-related activities. Implementation materials, training manuals and technology-enhanced lesson plans will be distributed during the training sessions.

The specific training sessions will include:

Model Schools Program Project Coordinator Training (3 days)

- Awareness
- Management
- Budget preparation and planning
- Distribution of Model Schools Program products
- Monitoring and publicity technique
- Telecommunications

CIMS Regional Project Coordinator Training (Math and Science) (5 days)

- "Tool-software" training
- Training in Model Schools Program/CIMS technology-enhanced lessons
- Telecommunications - PROFS/CoSy
- Demonstration of possible learning alternatives for Special Education populations

Site Administrator Training (5 days)

- Upgrading "tool-software" skills - Apple/Appleworks, IBM/Assistant Series, MacIntosh/Microsoftworks
- "Tool-software" integration K-12 curriculum
- Development of products
- Telecommunications
- Facilitating project districts
- Development of training perspectus
- Writing Request for Proposal (not applicable if COSER funded)

Curriculum Committee Chairperson (3 days)

- Tool-software training
- Awareness and implementation process indigenous to particular curricular areas and student populations
- Telecommunications training - CoSy

IV. **Telecommunications: To enable electronic communications and reporting among educators and students via the TNT network and computer conferencing forums, electronic mail and on-line database services.**

Computer conferencing and a computer-based electronics network will be used to support the following Model Schools Program activities:

Program-wide Telecommunications Activities

- o The Model Schools Project will use PROFS for e-mail and communications with SED.
- o TNT CoSy will provide forums for Statewide art teachers, the committees of the Model Schools project, Model Schools Program site administrators and State Education Department teacher mentors.
- o Teleconferencing using TNT CoSy will enable teachers, students and parents to communicate regarding this project.
- o Students, parents and Special Education teachers will participate in TNT CoSy computer-conferencing.
- o Local bulletin boards will accommodate district calendaring.

Quest

- o Queries Unique and Easy for Students and Teachers permit user-friendly interface for mainframe access, transfer and replication of curricular materials. Teacher use of this system interface is currently on hold pending software rewrite to comply with State standards.

Art Committee

Model Schools art teachers will join other art teachers across the State in sharing of computer-based lessons for the art room using TNT CoSy.

V. **Model Schools Program Evaluation: To determine the levels of competence in computer use and the levels of understanding of computers which students should be able to achieve at various grade levels.**

The following evaluation procedures will be undertaken:

- Questionnaires and structured interviews-determine configuration of, access to, and use of computers by teachers and students.
- Management documents - districts record semi-annually: training, curriculum development and presentations for Model Schools Program.
- Model Schools Survey - district by district and total project evaluation.
- Computer inventory sheets - access, availability and ratio of computers per teacher and students.
- Model Schools Program Lesson Plan Format-electronic lesson plan layout for database access and QUEST application.
- CIMS Feedback Evaluation Form - recorded utility and effectiveness of technology-enhanced math and science lessons by teachers following use with students.
- Model Schools Program Plan - statement of school district needs assessment and commitment to goals of the project.
- Evaluation of Model Schools Program Meetings-Site Administrators, State Planning Sessions, workshops and training, presentations at technology conferences and district visitations by Model Schools Program Coordinators.

THE MODEL SCHOOLS PROGRAM SPECIAL EDUCATION HOME LEARNING AND TELECOMMUNICATIONS PROJECT

CONTEXT

The Special Education Committee of the Model Schools Program, has targeted selected learning disabled students and parent coaches from 20 Central New York State school districts, to pilot an extended learning and computer-based conferencing initiative. This pilot will provide additional documentation of the founding principle of Model Schools which highlights Regents Action Plan guidelines calling for the integration of technology into all subject areas for the purpose of fulfilling curriculum objectives. The goal of supplementing the "regular classroom" environment to further the accomplishment of instructional objectives, for this student population and others which are considered "at-risk," is the foundation of this project.

TECHNOLOGY

Apple and IBM computers with modems and software have been ordered to place in the homes of the cooperating students and parent coaches. (It is recommended that the hardware be selected to mirror the "regular classroom" configuration.)

Lines for telecommunication by administrators, teachers and students, have been prioritized by cooperating school districts.

TNT/PROFS will offer e-mail capabilities for SED and field administration for on-going reporting.

TNT/CoSy will offer computer-based conferencing for teachers, students, and approved educational groups. This service will be provided by the Madison-Oneida BOCES on a dial-up basis using 800 numbers.

TRAINING

Since tool-software training and telecommunications remain as baseline requirements of the Model Schools Program, the Model Schools Special Education teachers will act as the facilitators for this pilot. These teachers will initiate student and parent training to support this effort.

Parent coaches will monitor home-based activity by keeping logs of actual assignments, progress, time-on-task and other notes on individual students. This will allow modification of student IEP plans with the approval of the district CSE.

Model Schools Site Administrators will provide ongoing technical assistance for all participants.

Special Education Regional Associates will be apprised of this application and they will be invited to monitor progress.

Model Schools SED and Madison-Oneida coordinators will contribute to forums set up for teachers, parents, and students. District-to-district sharing will be possible for all participants. SED and regional staff, who will oversee the Special Education activities will also be granted visitor status to field sites and lend support as needed.

ACTIVITIES

The Special Education teacher will select and correlate appropriate software for instructional reinforcement. Assignments will be sent home to enhance current classroom instruction and to meet specific instructional objectives. A sample home assignment could be as follows:

> Reinforce today's vocabulary by using Level I of Word Attack.
>
> Select 5 words from this exercise.
>
> Write a paragraph using these new words.
>
> Dial your conference "Kids" and tell your friend (on-line) about using your computer.

*OTHER SUGGESTED ACTIVITIES

- Bulletin Board pictures for newsletter
- Add a word, sentence, phrase, etc.
- "Let's guess" activities
- Nickname for on-line kids
- Pictionary
- Fan club
- Clues
- Interactive writing activities
- + - interesting topic discussion
- *Problem of a day in math, etc.
- Everyone solves activity
- End of week printouts
- Endangered species discussion
- Broadcaster for a day, week, etc.

PROJECT SITE VISITATIONS

Letters have gone out to Coordinators of Special Education informing them of this pilot activity and enlisting their support.

There will be arrangements made at the convenience of the parent coach for administrative and/or teacher visitations.

NEW YORK
THE STATE OF LEARNING

THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, N.Y. 12234

ASSISTANT COMMISSIONER FOR E&S EDUCATION PLANNING, TESTING AND TECHNOLOGICAL SERVICES
DIRECTOR, DIVISION OF E&S EDUCATION PLANNING

January 20, 1989

Dear Coordinator of Special Education:

We are pleased to inform you that your district as a Model Schools participant will be allocated equipment and funding for a home-tutoring pilot to serve the needs of Special Education students.

A teacher from your school district has been named to the Special Education Committee of the Model Schools Program and has received tool-software training. In addition, they have been trained in the use of telecommunications. In keeping with Model Schools objectives, we have observed their respective instructional applications in incorporating technology-enhanced lessons to meet curriculum objectives.

The Madison-Oneida BOCES is the instructional node of the TNT Statewide network. This network currently serves as the vehicle for gathering and disseminating student data across the entire State. Ultimately, the network will better serve handicapped and at-risk youth by linking educational databases and offering the Part 200 Management System as a TNT instructional service.

The Model Schools Special Education Committee will meet to discuss prospective parents and students to take part in this home/school pilot. Objectives will encompass the following:

1. Training of students and parents and teachers
2. Assignment of hardware and software
3. To provide extended learning environments
4. To correlate CAI for drill and practice
5. To link students, parents and teachers via computer-conferencing (TNT CoSy via Madison-Oneida BOCES)
6. To provide technical assistance to participants
7. To provide home tutoring for future IEP enhancement
8. To monitor and evaluate lessons, assignments and methods of instruction

9. To share pilot evaluation with local, regional, and State facilitators

10. To modify CIMS math and science lessons for Special Education populations

11. To experiment with dial-in access to CAI systems

As you can appreciate, our goals are ambitious, yet this committee has demonstrated exemplary vision in providing insight into Special Education instructional settings.

We will provide updates as they become available. Please feel free to phone Lynn Reuss (518) 486-6074 or Fran Brewer (315) 363-8000 for further information.

Thank you for your support.

Sincerely,

Lynn Reuss and Fran Brewer

cc: Steven J. Kidder
Robert Capoccia
Nancy Lauria
Mark Kneidinger

New York City Board of Education
Office of Technology
Irwin Kaufman, Director
Marc Licht, Joseph Eaione, Susan Levine, Assistant Directors

Bronx Technical Assistance Center
Dr. Florence F. Mann, Regional Supervisor
Elizabeth Burton, Assistant Regional Supervisor

COMPUTERS

Why are Computers Helpful For Children With Learning Problems?

Learning Problem	Computer Assistance
ATTENTION DIFFICULTY	The monitor helps students focus attention. Programs provides color cueing and animation. Underlining, highlighting or boxes are used to focus attention.
REACTION TIME SLOW	Computers repeat without becoming impatient and wait time is usually based on student response .
IMPULSIVE	Programs allow for multiple tries before finalizing a response.
SHORT TERM MEMORY	Programs provide repetition and overlearning cueing.
DIFFICULT ASSESSING PROGRESS	Programs provide immediate feedback. Some programs provide error analysis as well as general management of student progress.
HANDWRITING	Wordprocessing programs circumvent the problems created by slow motor skills causing poor handwriting. They also make editing less tedious allowing for more creativity.
LEARNED HELPLESSNESS	The computer helps provide positive reinforcement as students learn to achieve at a higher levels of performance. Some programs are personalized and refer to students by their names or secret password.

Division of Elementary and Secondary Education Planning
Bureau of Technology Applications

The Technology-Based Model Schools

Description of Project Goals/Objectives:

See attached document.

Target Audience:

K-12 administrators, teachers and students and Statewide educational groups using telecommunications.

Department Contact Person:

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New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 486-6074

Field Contact Person:

Mrs. Francess Brewer
Madison-Oneida BOCES
Spring Road
Verona, New York 13478
(518) 363-8000

Scope Notes:

Model Schools is the instructional fieldtest site for TNT which has determined the extent to which computer technology can improve the effectiveness and efficiency of instruction. Currently 22 school districts in Central New York continue to demonstrate the appropriate influence of technology on curriculum, school organization and operation. The TNT network is a main vehicle for conducting this project and constitutes the proposed Statewide mode of communications. Model Schools lessons will be stored and electronically accessed via TNT by teachers.

Division of Elementary and Secondary Education Planning
Bureau of Technology Applications

Technology Applications Quarterly

Description of Project Goals/Objectives:

To provide a quarterly reporting forum for technology-based Department and field initiatives.

Target Audience:

All New York State Education Department offices, schools, District Superintendents, BOCES, Teacher Resource and Computer Training Centers, teachers and educational organizations.

Department Contact Person:

Mrs. Lynn Reuss
New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 486-6074

Field Contact Person:

Ms. Lucille McCabe
New York State Education Department
Room 9A68 CEC
Albany, New York 12234
(518) 486-4838

Scope Notes:

In an effort to provide State, regional and local technology reporting on technology initiatives, the Department will provide a newspaper to be distributed on a quarterly basis. Telecommunications, technology-enhanced curriculum applications, major updates for on-going research and development projects, and vendor and organizational news will be included.

Division of Elementary and Secondary Education Planning
Bureau of Technology Applications

Special Education Remote Access Project for Model Schools

Description of Project Goals/Objectives:

To provide:

- a "mirrored classroom setting" for learning disabled and Special Education populations
- to link district to district activities of Special Education students, teachers, parent-coaches via computer conferencing.

Target Audience:

Selected Special Education students, teachers and cooperating parent-coaches within 22 New York State school districts.

Department Contact Person:

Mrs. Lynn Reuss
New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 486-6074

Field Contact Person:

Mrs. Francess Brewer
Madison-Oneida BOCES
Spring Road
Verona, New York 13478
(315) 363-8000

Scope Notes:

See attached document.

YOUTH-AT-RISK ELECTRONIC CLEARINGHOUSE

Office of Elementary and Secondary Education
Planning, Testing and Technological Services
Division of Elementary and Secondary Education Planning
Bureau of Technology Applications

YOUTH-AT-RISK ELECTRONIC CLEARINGHOUSE

Description of Project Goals/Objectives: To develop an information service accompanied by communication capabilities provided to the field for accessing, sharing and updating purposes.

Target Audience: Initially Youth-at-Risk site administrators and New York State professionals involved with this initiative, eventually students, teachers and others will be added, as needs arise.

Department Contact Person: Barbara J. Piwnica
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Albany, New York 12234
Phone: (518) 486-6074

Field Contact Person/Title: NA
Address:
Phone:

Scope Notes: Currently underway is the establishment of a Youth-at-Risk Electronic Clearinghouse. It will run under Model 204 on TNT. Once established, it will provide a means for the Youth-at-Risk site administrators as well as State Education Department employees to participate in a comprehensive electronic forum.

The forum will be accessed through the SED/TNT mainframe. It will provide YAR site administrators across the State with the capabilities of sending and receiving mail, conferencing and accessing pertinent databases.

Users will be provided with information pertinent to Youth-at-Risk on:

- current State and Federal funding sources;
- current State funded programs;
- human and non-human resources; and
- bibliographic information available through the ERIC Clearinghouse, health and adult education databases

As the Clearinghouse is used, its design and content may be altered to meet the users' needs.

Once the Youth-at-Risk activity is underway, information collected at the State Education Department and available on the SED mainframe will be shared and accessed through TNT.

Division for Program Development

Gifted Education Unit

Office of Elementary and Secondary Education
Planning, Testing and Technological Services
Division for Program Development
Gifted Education Unit

FACT SHEET ON PROGRAMS FOR THE GIFTED

Description of Project Goals/Objectives:

To provide information on local school districts' programs for gifted students, including the number of students served, the nature of the services, sources and uses of funds, and instruments used to identify gifted students.

Target Audience:

Local school officials, teachers, parents, legislators.

Department Contact Person:

Dr. David J. Irvine
New York State Education Department
Room 314-B EB
Albany, NY 12234
(518) 474-5966

Field Contact Person:

None

Scope Notes:

Each year school districts complete a questionnaire, "Fact Sheet on Programs for the Gifted," and submit it to the State Education Department. The data is entered into a dBASE III computer file. Information can be retrieved by type of program, grade level, region of the State, and a variety of other variables.

Office for Education of Children with Handicapping Conditions

Use of Technology in the Instruction of Students with Handicapping Conditions

Contact:

Fredric DeMay/Mark Kneidinger
State Education Department
Room 1069 EBA
Albany, NY 12234

(518) 474-8917

The Use of Technology in the Instruction of Students with Handicapping Conditions

The New York State Education Department - Office for Education for Children with Handicapping Conditions firmly believes that the effective and appropriate use of technology represents a significant tool to assist in instruction and learning, provide increased accessibility to programs and services and decrease perceived differences between handicapped and nonhandicapped students. The attainment of these goals on a systematic basis, however, requires the purposeful and creative involvement of the entire educational community in cooperation with private sector developers of hardware and software products.

Any discussion of the instructional use of technology for students with handicapping conditions must begin with the realization that the goals of special education are the goals, for the most part, of regular education and that the standards accepted for the application of technology in regular education also apply to special education. To illustrate, if educators in general maintain that computer technology offers the potential for helping students develop problem solving and abstract reasoning skills and that continued development of materials and strategies is needed, then it follows that the same needs apply to special education.

Special education is most likely to depart from regular education in the methods and techniques used to meet the individual needs of students with handicapping conditions. It is within this area that technology holds the greatest promise. That potential is reflected in several broad areas:

1. As an instructional tool, technology provides a means for students with handicapping conditions to learn, practice and reinforce basic skills and subject area content in a controlled setting and at a pace matched to the student's abilities. Given appropriate software programs, a student is afforded an additional means of enhancing and supplementing curriculum presented in either a regular or special class program. Ultimately, access to improved methods of instruction, including technology based instruction, may mean that a student with a handicapping condition has a better opportunity to achieve instructional goals and participate successfully in regular education programs.

2. As a strategy in developing occupational skills, technology allows students to develop job skills or be retrained for new careers. This may be accomplished through direct training on hardware and/or software that the potential employee is likely to use on the job or through programs that provide simulated experiences of tasks, skills or activities required for various occupations. The value of this approach for students with handicapping conditions is that possible problems or difficulties associated with jobs may be identified and solutions developed and tested within a controlled environment.

3. As a personal management tool, applications of technology provide students with handicapping conditions with a means to effectively develop, record and communicate ideas, thoughts, feelings, work assignments, personal information, etc. through standardized software programs. By using wordprocessing, graphics, communications, and similar applications programs individuals with handicapping conditions are provided with consistent and standardized procedures for organizing, accessing, and preparing information.

4. As a recreational tool, technology provides an alternative for many handicapped individuals who have difficulty assessing the traditional recreational outlets available to nonhandicapped individuals. Beyond games and related types of programs individuals are provided with a means to develop and express their own creativity.

5. As an extension of the body, peripheral equipment and specialized input/output devices (with accompanying software) offer an opportunity for individuals with communication disorders, visual and/or hearing handicaps, and physical or perceptual disabilities to compensate for their disabilities. Programmable keyboards, braille readers, light pen input devices; voice synthesizers, and enlarged display output devices, roboticsetc. are a few examples that represent the emergence of a growing commitment and recognition that applications of technology may be used to improve the abilities of handicapped individuals to participate more fully in a communication and information based society. Significant and dramatic gains in this area would increase the ability of handicapped individuals to access educational opportunities.

Technology offers the opportunity, as does any tool, to enhance instructional programming efforts on behalf of students with handicapping conditions. The unique aspect of technology, however, is that it may significantly reduce the effects of certain handicapping conditions for some students, an impact that goes far beyond the classroom.

Concern over the use of technology in special education has been expressed by many educators. A primary concern is the lack of quality software programs that are designed to meet the needs of individuals with handicapping conditions and the resulting use of inappropriate software simply because it exists and is available for use within a particular school building. In essence, an advanced hardware capability is of little value if there is limited or restricted availability of software to meet specific student needs. Related to this concern is the marketing approach associated with technology and special education. New products are often promoted as being designed specifically for special education, and other products are promoted as the ultimate in techniques to solve special educational problems. Educators must look beyond the promotional strategies to what is actually needed for the student if technology is to be used effectively in the educational setting.

Recommendations

The recommendations listed below for incorporating technology in special education programs are based on an approach which emphasizes that special education is an integrated component of regular education:

1. Include special education programs and services in any school-wide or district-wide planning efforts for technology. While methods and techniques may differ in special education programs, the overall goals remain the same. It is critical that special education not be viewed as a separate a detached service delivery system within a school and that the needs of students with handicapping conditions be considered in conjunction with the needs of all students.

2. Consider the long-term benefits of using technology based programming efforts for students with handicapping conditions. Before any approach is decided by a Committee on Special Education or by a classroom teacher, consideration should be given to whether the technique is related to student goals and will benefit the student in all related academic, social and physical development areas.

3. Include appropriate evaluation of all software and hardware products being considered for use. Adopt evaluation procedures that ensure that products are matched to the needs of students and have the capability to be adjusted to specific instructional levels and techniques.

4. Include appropriate provisions for staff development in the area of technology. Many teachers are unfamiliar with applications of software and hardware tools for education. The effective use of technology requires commitment to train those individuals who will be applying it in schools.

5. Integrate technology within all goal areas. For example, arrange small groups or pairings of students to solve problems presented by a computer as a strategy to encourage social interaction. Integrating technology across all programming areas encourages its use as a tool under the direction and control of educators rather than as a end to itself.

In summary, technology can provide effective tools which assist students with handicapping conditions to benefit from instruction and to increase occupational potential. A key consideration in the use of technology is identifying and matching hardware and software to the individual needs of those students.

Office for Education of Children with
Handicapping Conditions
Division of Program Development

PART 200 MANAGEMENT SYSTEM

Description of Project Goals/Objectives:

The Part 200 Management System is a computer program designed to assist educators in carrying out requirements mandated through Education Law and Part 200 Regulations of the Commissioner.

Target Audience:

Administrators and teachers

Department Contact Person:	Mr. Fred DeMay/Mark Kneidinger NYS Education Department Room 1069 EBA Albany, NY 12234 (518) 474-8917
Field Contact Person:	Regional Information Centers and/or Special Education Training and Resource Centers (SETRC)

Scope Notes:

The primary emphasis of the Part 200 Management System is the improvement of programs and services for students with handicapping conditions through better management and use of information and resources. The system is a component of the Statewide TNT initiative and will help meet reporting requirements of the Department.

The system is designed to address the following areas: (1) administrative responsibilities; (2) procedures for referral, evaluation, recommendation and placement; (3) consistency and validity of student-specific information; and (4) communication. Microcomputer, minicomputer and mainframe computer versions are available.

Office of Educational Finance and Management Services

Bureau of School District Organization

Office of Educational Finance & Management Services
Bureau of School District Organization

DISK SUBMISSION AND AUTOMATION OF BOCES SERVICE APPLICATIONS

Description of Project Goals/Objectives:

To develop formats and procedures for submission of BOCES service applications (CO-SERs) on floppy disk to upload to the SED mainframe computer.

To eliminate submission of duplicative data to various State Education Department offices.

To promote efficient use of data submitted by BOCES to SED through the development of a central database which can be accessed by a number of SED offices to meet needs for BOCES data.

Target Audience:

State Education Department and BOCES

Department Contact Person:

Sterling L. Pierce
New York State Education Department
Bureau of School District Organization
Room 671 EBA
Albany, New York 12234
(518) 474-3936

Field Contact Person: None

Scope Notes:

All forty-one BOCES submit service applications (CO-SERs) in disk format to the Bureau of School District Organization. A common print file format has been adopted and each BOCES determines the means they will use to create the print file. Currently, this is occurring in three ways. Some BOCES download their budget data directly from a mainframe computer into the print file. Some BOCES are using a specially-designed BOCES software package which completes certain business office functions along with the CO-SER. Finally, a large group of BOCES use a standard spreadsheet software package to create a CO-SER print file.

The BOCES report a reduction of 60% to 90% in time spent preparing applications. The primary effect on the State level has been the ability to provide data in various report formats to other Department offices, other State agencies, the Legislature, and other interested parties. Future plans include simplification of the data submission format and improving the data submission through front-end editing.

Office of Educational Finance & Management Services
Bureau of School District Organization

EFFICIENCY STUDY GRANT PROGRAM

Description of Project Goals/Objectives:

Efficiency Study Grants provide funds, up to $20,000 per grant, for two or more school districts to conduct studies to determine the educational, organizational and financial advantages that might be achieved through sharing programs, staff, services or facilities, or by combining their districts.

Target Audience:

Cooperating public school districts.

Department Contact Person:

Kenneth Rowe
New York State Education Department
Chief, School District Organization
Room 671 EBA
Albany, New York 12234
(518) 474-3936

Field Contact Person: N/A

Scope Notes:

Bureau of State Aided Programs

Office of Educational Finance & Management Services
Division of Educational Finance
Bureau of State Aided Programs

COMPUTER INSTRUCTIONAL HARDWARE AID

Description of Project Goals/Objectives:

School districts are eligible for aid for the purchase or lease of micro- and/or mini-computer equipment or terminals for instructional purposes. Aid is equal to the approved per-pupil expenditures (limited to $8.00) x the building aid ration x district TAPU. Approved expenses are those incurred in the base year.

Target Audience:

School Administrators

Department Contact Person:

Eugene Smith
New York State Education Department
Bureau of State Aided Programs
Room 969 EBA
(518) 474-2977

Field Contact Person:

N/A

Scope Notes:

Total funding for 1988-1989 is $8,538,000.

Office of Educational Finance & Management Services
Division of Educational Finance
Bureau of State Aided Programs

COMPUTER INSTRUCTIONAL SOFTWARE AID

Description of Project Goals/Objectives:

Aid for purchase and loan of computer software.

Target Audience:

School Administrators

Department Contact Person:

Eugene Smith
New York State Education Department
Bureau of State Aided Programs
Room 969 EBA
Albany, New York 12234
(518) 474-2977

Field Contact Person: N/A

Scope Notes:

The responsible representatives of each public school district and nonpublic school must designate software programs to be used in conjunction with the computers of the school district.

This aid is equal to the per-pupil approved expenditures (limited to $3.00) times the combined enrollment in all public and nonpublic schools located in the district.

Formula components can be expressed as follows:

School enrollment = The number of pupils attending in the base year, enrolled as of the first school day in October, in grades K-12 in public and private schools, plus the number of pupils with handicapping conditions residing in the district who attend programs in the base year.

Software Aid = Approved enrollment of pupils x approved expense/pupil (limit $3.00).

Expenses claimed are those of the current year.

Software purchased with this aid must be made available for loan to private school pupils on an equitable basis.

Total funding for 1988-89 is $9,170,000.

Office of General and Occupational Education

Division of General Education

Bureau of Arts, Music and Humanities Education

Computer Arts and Music

Contact:

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State Education Department
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Albany, New York 12234

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Computer Arts and Music

The Bureau of Arts, Music and Humanities Education have welcomed the advent of computers as a tool for the arts and music into New York State classrooms since the 1970's. We continue to encourage art, music and humanities teachers to use these powerful tools with their students in the music and visual arts.

The computer is an incredibly exciting device for artistic (audio and visual) purposes. It is a machine that supports and enhances what we traditionally think of as art and music and allows the creator to conceive and realize in ways never before thought possible. The computer in the art and music classroom is a must at all grade levels.

As potentially creative and fantastic as computer graphic and music systems are, it is not enough to seat the students in front of the system. Anyone can learn to operate terminals in just a few days, just as anyone quickly learns how to make marks with a pen or pencil or brush, but only an artist or composer can create good art or music. Students in the elementary and secondary schools must have available examples of computer works created by reputable artists and composers. TV and films provide sources for a meaningful discussion with students about computer generated art and music. "2001, A Space Odyssey," "Tron," "Miami Vice," "Entertainment Tonight," and most MTV are dazzling examples. Allowing students to create with the computer to make music and visual arts is not enough; the teacher must always provide the historical, cultural, and aesthetic context of any art form that is being taught.

The following are examples of how various New York State schools have integrated computers into their curriculum:

- The High School of Art and Design, New York City, probably has more students involved in computer graphics than any other school in the State. They have approximately 200 majors in Computer Graphics, approximately 300 majors in Architecture, and most other art majors opt for at least one course in Computer Graphics. The school is fully equipped with appropriate computers and software.

- Sachem High School, Lake Ronkonkoma, New York, offers Computer Graphics I and Computer Graphics II through its art department. There are eighteen computers in the lab, which is fully used by 36 students in these two courses.

- Troy Junior-Senior High School, Troy, New York, has a full component of course offerings in music using computers, synthesizers, and video interactively.

- Norman Thomas High School, Manhattan, New York City, programs all "Studio in Art" enrolled students, on a weekly basis, one period per week, into the computer room to work on computer graphics.

- Shaker Junior High School, North Colonie Central Schools, has implemented a computer assisted design problem for every student in both grades 7 and 8 as part of the Art 7/8 Syllabus curriculum. Students learn first hand the additive color and subtractive color systems.

- Northport-East Northport High School has implemented a Comprehensive Foundation Course in Media Arts which infuses the technology of the computer, video, film and photography into a full year high school course of study.

- Hicksville Union Free School District, Lawrence Union Free School District, Jericho Union Free School District, East Islip Union Free School District, Patchogue-Medford Union Free School District, Union Endicott Central Schools, and Newburgh City Schools have all implemented computer courses of study in the art curriculum. Each course of study has infused Regents Goal 3 into the curriculum.

- The Jamesville Elementary School (Jamesville Dewitt Central Schools, Dewitt, New York) art room is equipped with computer terminals. Students in grades K-6 have the opportunity to use the computer as an integral part of their art work.

- The Roth High School (Rush-Henrietta Central Schools, Henrietta, New York) art students regularly interface computer generated effects with their video production, as well as graphicworks.

- The students in John F. Kennedy High School, Bronx, New York, have expressed such a strong desire for courses in computer arts that in 1984 the art department had approximately 100 students enrolled in the computer arts course with only one $99.00 Commodore computer for everyone. They now have a full lab of computers with hundreds of students.

The new syllabus/handbook from the State Education Department, Music In Our Lives, encourages teachers to offer students the opportunity to use computers to create music. Several model lesson plans on the subject are included in the document in conjunction with electronic music.

The computer with a color monitor and RGB board and a color printer provides a unique means to implement and reinforce student learning in the additive and subtractive color objectives of the K-12 art curriculum. When the computer interfaces with video there is laser video-audio technology at the students' fingertips that infuses Regents Goal 3 in a way not obtainable previously. Hypermedia brings the multicultural treasures of the world's museums into the classroom and provides an opportunity for learning higher level skills in analysis, synthesis and evaluation.

Design and Drawing for Production is a newly implemented visual art comprehensive foundation course of study that provides intensive study in the elements and principles of art and infuses Regents Goal 3 into every activity. The course utilizes "state of the art" technology and focuses on learning activities related to a Design Activity Brief. Computers are utilized with emphasis on creative problem solving and a combination of conceptual, critical, quantitative and rational thinking modes. Each Design Activity Brief is to infuse all seven constants (technical drawing, design activity, research and critical analysis, historical references, skills, linkage, and evaluation) into the content. The course is being taught in high schools across New York State.

The New York State Summer School of the Arts--School of Media Arts has been offering computer arts as a component of its six week school for gifted high school students for the past five years. This is a broad based program, not limited to the graphic aspect of the computer, but students are expected to explore the sound and interactive aspects of the media. These students not only use personal computers but have access to SUNY at Buffalo's mainframe computer for their work.

Computer arts workshops have been a regular offering at the annual Toward Humanizing Education (April) and the Arts in Education (July) conferences sponsored by the Bureau of Arts, Music and Humanities Education and the annual Learning Technologies Fair (February).

Bureau of Mathematics Education

The Use of Computer Technology in Mathematics Education

Contact:

Benjamin Lindeman
State Education Department
Room 306 EB
Albany, New York 12234

(518) 474-3900

The Use of Computer Technology in Mathematics Education

Recent developments in computer technology have resulted in the increasing presence of computers throughout our society. As a consequence, our schools must meet the challenge to prepare our students to make effective use of this relatively new technology. The New York State Board of Regents, in their Action Plan to Improve Elementary and Secondary Education Results in New York, recommends that students in grades K-12 acquire the skills necessary to use computers for problem solving.

Mathematics teachers were among the first to recognize the potential of the new technology. The mathematics curriculum offers a broad range of opportunities to use computers for problem solving, drill and practice, simulations, and programming applications. Computers can be used to develop and reinforce understanding of topics in the regular mathematics curriculum as well as topics not normally accessible to students without the aid of a computer.

National Council of Teachers of Mathematics

The National Council of Teachers of Mathematics recommends that mathematics programs take full advantage of the power of calculators and computers at all grade levels. The increasing availability of microcomputers, due at least partially to decreasing costs, has enabled schools to prepare students of the 1980's to live in a world in which more and more functions are being performed by computers. The NCTM recommendation states that most students must obtain a working knowledge of computers; how to use them, including the ways in which one communicates with them; and their uses in problem solving. The recommendation includes:

- the integration of calculators and computers into the core mathematics curriculum.
- curriculum materials which use the calculator and computer in diverse and imaginative ways.
- a computer literacy course, which familiarizes the student with the role and impact of the computer, as an integral part of every school's curriculum.
- secondary school computer courses designed to provide the necessary background for advanced work in computer science.

The NCTM recommendation implies that computers can be integrated into the curriculum in three very different ways:

1. as the object of instruction - learning about the computer: its history and social impact, computer privacy, how it functions, etc.
2. as an instructional tool - using the computer to teach and to reinforce learning beyond a drill and practice mode.

3. to teach programming skills - preparing a set of instructions for the computer to follow.

Bureau of Mathematics Education

The philosophy of the Bureau of Mathematics Education closely parallels the ideas inherent in this NCTM recommendation. Basic tenets of this philosophy are:

- Learning about the computer, including its limitations and potential, should be a part of all students' mathematics education. In the 7-8 mathematics syllabus, this is referred to as computer awareness.
- There should be equity of access to computer education for all students: boys and girls; upper grades and lower grades; gifted, average, and remedial students; students with handicapping conditions.
- Computer applications which aid the instructional process should include drill and practice, tutorials, simulations, and problem solving activities.
- Computer activities can be used to introduce mathematics topics and to provide remediation and enrichment activities.
- The computer can aid handicapped students and others who require special assistance.
- The computer can provide for the management of instruction; however, every effort should be made to ensure that any management system used is for the purpose intended and that it does not replace the critical classroom interaction of students with peers and teachers. Computer managed instruction is not a substitute for good classroom instruction and should not limit what is taught.
- Computer managed instruction should not be confused with computer aided instruction. Management of instruction differs from computer aided instruction in that its primary purposes are testing, diagnosing, and student record keeping. Care must be taken to assure that the management of instruction is not confused with instruction.
- There is a place for programming in the curriculum, but not everyone in our modern society needs to be able to program a computer. The extent and scope of programming skills, what language to use, and when it should be taught will partially be determined by a review of the needs of each school's student body. Programming should not be taught as an end in itself, but should fulfill student needs and school objectives.
- All students should be able to use commercial software.

- Problem solving should be one of the major objectives of any good mathematics program. The potential of computer technology for increasing problem-solving ability should be explored and implemented through commercial software, teacher made software, and the process of programming.

State Curriculum

The present K-6 recommended State curriculum does not include any formal use of the computer, but the Department does recognize that many elementary schools include some use of the computer in their local programs. This includes programming (LOGO is popular), computer assisted instruction, and computer managed instruction.

Drill and practice programs are widely used in remedial classrooms and are the most common type of programs found in software distributors' catalogs today. Drill and practice programs are most beneficial when used with individual students or very small groups. By contrast, tutorial programs are designed to teach, as well as provide practice, and can be used to supplement classroom instruction.

Additionally, simulations are useful in elementary school mathematics to set up a model, real or hypothetical, which students might not otherwise be able to experience. Simulations provide an opportunity to interrelate mathematics with other areas of the curriculum, an idea which the Bureau continually supports.

The computer assists in the development of mathematics concepts and the reinforcement of mathematics skills when good software is available or can be created by the teacher. All commercial software should be thoroughly evaluated for its potential effectiveness before being used by students. Review of software should assure that there are no biases about computer use.

Entertainment and game playing on the computer should not be done at the expense of skill and concept development. A publication, "Teaching Mathematics With Computers, K-8" has been prepared and distributed throughout the State.

The Mathematics 7 and Mathematics 8 syllabi include strands on Computer Awareness. These are designed to provide the students with an introduction to the computer field as well as to provide motivation for the mathematics material that is included in the other strands of the syllabi.

Computer arithmetic input/output formats provide natural applications for reviewing basic mathematics operations introduced in the elementary school. For example, knowing order of operations is essential when using a computer.

Computer functions such as square root, absolute value, greatest integer, and random number generators reinforce concepts presented in other strands of the syllabus.

Learning a programming language is not required in Mathematics 7-8 although an optional section on programming is provided in the Computer Awareness strand. The emphasis is on using the computer as a problem-solving device. A program is merely an algorithm or a plan for solving a specific problem, and problem solving is the focus of this syllabus.

Although the high school's written curriculum does not include any mandated use of the computer, the Bureau encourages use of the computer at the high school level. For example, it can effectively be used by the teacher to illustrate mathematics concepts. Also, computers with graphic capabilities are of particular value in the mathematics classroom.

In New York State, two years of mathematics is required for receiving a high school diploma. Computer mathematics is a possible second course to meet this two year mandate for students pursuing a local diploma. This course should extend the mathematics developed in previous courses through problem solving activities commensurate with the ability of the student. The course would be locally developed and then approved by the State Education Department. The course must include the study of mathematical topics using the computer as a tool. Such topics may include, but are not limited to, number theory, topology, simple algebra, statistics, and probability. Programming or keyboarding courses do not satisfy the second-year mathematics requirement. Although programming may be an integral part of this course, application of mathematical topics must be central to the course.

Courses in computer programming are often offered at the high school level and taught by mathematics teachers. Again, these courses should teach programming through mathematics content. The process of programming involves defining and analyzing a problem, structuring an algorithm, and writing and rewriting (coding and debugging) a program. Thus, programming can be used to stimulate thinking and to reinforce the students' understanding of the mathematics concepts under consideration. The rigor and understanding needed to design and produce a computer program can become an effective learning process.

The Department has prepared and distributed a publication, Teaching Mathematics With Computers, 9-12, to assist schools in addressing the integration of technology into their curriculum. This publication is designed to make suggestions and give examples of how computers may be used to enhance students' understanding of mathematics concepts and applications in secondary school mathematics curricula. It contains a section on integrating commercially produced software into the mathematics curriculum. A suggested course outline for Computer Mathematics to be used as a second year of mathematics for a local diploma is included as well as topics to be included in an advanced course in Computer Mathematics.

Educational Testing Service has developed an Advanced Placement Course in Computer Science. The major emphasis in this course is on programming methodology, algorithms, and data structures. As such, the Bureau feels that sufficient mathematics and mathematical prerequisites are present to qualify for mathematics credit. Hence, this course may be used as one of the courses in a five year sequence in mathematics.

Conclusion

The effective use of computers in the classroom will be a function of the teacher's ability to infuse the technology into his/her instructional methods. There is a true distinction between the ability to program and teach programming and the use of the computer as a tool of mathematics. The first is a necessary but not sufficient condition of the second. Therefore, the Department urges school districts to provide on-going inservice programs for staff members. These are often taught by the local "expert" or the computer coordinator for the district. In inservice programs, strategies for encouraging the use of the computer by females and other minorities should be included. Teachers should also avail themselves of State, local, and national conferences, professional journals, their local BOCES, the Bureau of Technology Applications, the Teacher Resource and Computer Training Centers, and local colleges for professional growth in the use of computer technology in mathematics education.

Bureau of School Library Media Programs

Computer Technology and School Library Media and Information Services

Contact:

Frances R. Roscello
State Education Department
Room 767 EBA
Albany, New York 12234

(518) 474-2468

Computer Technology and School Library Media and Information Services

Rapid technological change has affected and will continue to affect all aspects of school library media and information service in the elementary and secondary schools of New York State. The school library media center is an integral part of the school program, and as such supports the educational an instructional program and curriculum of the elementary and secondary school, providing students with skills and attitudes needed to become lifelong learners and adult independent learners. School library media centers are changing as they add materials in new formats (microforms, videotapes, laser and video discs, and computer floppy (microforms, videotapes, laser and video discs, and computer floppy and hard disks) to their existing print and nonprint collections. The availability and low cost of the microcomputer, coupled with the ability of students to use it easily, has resulted in its use as a tool for word processing, file management, and computer assisted instruction in many library media centers of this state. The interdisciplinary aspect of school library media centers has contributed to their playing a key role in integrating computers into all subject areas.

All school library media centers should have computers available for students to use during the entire school day. Media centers should not be used as computer labs, but as extensions of the classroom. As students come to the library media center to use books, periodicals, filmstrips, video, etc. to augment class assignments, they should be able to use computers to practice and strengthen skills taught in computer courses. Use of the micro should not be limited to computer literacy skills, but should include the use of software in all subject disciplines (Library Media and Information Skills Syllabus - 1986 Draft). Microcomputer software is an integral component of the library media program. It should be cataloged and processed in the media center collection just as print materials are so that it can be used independently by students to reinforce skills, expand knowledge and complete course work.

Libraries and library media centers are indeed changing and this change is largely attributed to computers and computerization. Students are no longer limited to the use of resources of an individual library media center, but have access to unlimited resources through the resource sharing and interlibrary loan capabilities of the 46 School Library Systems across the State. Although cost has prevented schools form being linked by computer to each other until now, the picture is rapidly changing. Decreasing cost, additional funding and technological advances make such linkages a reality. Schools recognize the need to convert library catalogs to machine readable format using the accepted standardized format known as the MARC record. National databases like OCLC, Bro-Dart and Utlas are being utilized by the School Library Systems to create union catalogs in MARC format in order to be able to participate in regional, state and national resource sharing.

The ways in which library media center collections are organized and used are being redesigned and different personnel needs are being created as computers perform more clerical tasks. It is imperative that library support staff be computer literate. Circulation systems, bibliography preparation, catalog production, inventory processes are computerized operations which are not common place in many schools in New York State. These tasks and many other technical services important to the smooth operation of the library media center have been streamlined by microcomputers. Complete computerization of retrieval sources, for example, the card catalog is on the horizon. School districts willing to invest in the future of technology and library automation find that only cost prevents them from moving from simple to more fully integrated systems which can include electronic bulletin boards and on-line database searching for students, as well as above mentioned library management functions.

Central to the use of technology and its incorporation into the overall library media program, is the presence of a certified Library Media Specialist. Elementary schools without library media specialists will not be able to implement the technological advances outlined above. Elementary and secondary schools without sufficient numbers of professional and clerical/technical staff will have difficulty including these technological advances in library media programs. By the nature of the training, certified library media specialists are those most qualified to integrate computer technology into our schools. Throughout New York State, library media specialists are in the forefront in promoting the use of technology to achieve lifelong learning.

Office of General and Occupational Education
Division of General Education
Bureau of School Library Media Programs

Description of Project Goals/Objectives:

Automation of the management and retrieval functions of school library media centers through an integrated on-line computer system.

Target Audience:

School Library Media Specialists

Department Contact Person:

Frances Roscello
New York State Education Department
Bureau of School Library Media Programs
Room 676 EBA
Albany, New York 12234
(518) 474-2468

Field Contact Person/Title: List being developed

Scope Notes:

Many management functions of library media centers lend themselves to automation. Some schools in recent years have installed an automated circulation system marketed by leading library vendors. With the sophistication of microcomputers and their larger storage capabilities, plus reduction in equipment cost, many schools are investigating the installation of integrated systems. These systems need to be in MARC format (a standardized library format) to provide for electronic database building and sharing of resources between libraries. Schools across the state through their School Library System, resident at each BOCES/Big City, have been developing plans for Co-Ser aid to defray the cost of these MARC format systems. Eventually most schools will have these integrated systems; presently only a few schools have these systems, however, many installations are in the planning stages.

Office of General and Occupational Education
Division of General Education
Bureau of School Library Media Programs

Description of Project Goals/Objectives:

To provide resource sharing between all types of libraries through database development, collection development, inservice education, and interlibrary loan with delivery.

Target Audience:

All school age children, teachers, library media specialists, and administrators.

Department Contact Person:

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Field Contact Person/Title:

School Library System Director at each BOCES or Big City

Names available upon request from the Bureau of School Library Media Programs

Scope Notes:

Forty-six School Library Systems were developed by law in 1984. Previous to 1984 except for 12 pilot projects, the majority of school library media centers had no organized mechanism for sharing of resources or for obtaining resources from other types of libraries. School Library Systems are completely State funded for basic services. Presently, the statewide funding level is $5.1 million.

Many of the functions of the School Library Systems use the most modern technology including micro- and mini- computers for database development and access, collection development and fiscal management. Some School Library Systems have their database on CD/ROM disc. All School Library Systems use the electronic bulletin board, NYLINE, furnished by the State Library. Some systems have purchased FAX equipment.

The sharing of the database to individual schools through modems or terminals is being developed in many School Library System areas. School Library Systems not only coordinate sharing of resources but also inservice for library media specialists, coordinated library services through Co-Ser's, and the developing of a plan for coordinated collection development. Due to the low funding level, the full potential of School Library Systems has not yet been realized.

Bureau of Science Education

*1986

I-113

The Use of Computers in Science Education

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The Use of Computers in Science Education

Computers show great promise for augmenting scienc classroom instruction under the guidance of the teacher (6). The challenge to the science teacher is to determine how this new and developing technology can be used to teachscience more effectively (3).

The computer is just one tool to help students learn in an expanding array of technological media, and computer applications must be chosen with care to supplement rather than supplant instruction. As a tool, the computer can be used to receive, organize, store, analyze, interpret, and communicate information; access bodies of knowledge; and aid in solving problems (1). Perhaps the major role of the computer in the science classroom is to provide opportunities for learning that are not possible with conventional means of instruction (6). The question here is: What ca students learn using computers that they could not learn, or could learn only with difficulty, without computers? (14). In answering this question, science teachers should capitalize on the powers inherent in computers: rapid calculation, word processing, data storage and manipulation, graphics, color, and animation (7). The computer should be used in situations where students take active rather than passive roles in learning, and should promote critical thinking and problem solving-improving what goes on in students' heads.

There are many uses of the computer which are not unique to science education: computer assisted instruction (CAI), including drill and practice, tutorials, and remediation; computer-managed instruction (CMI); diagnosis of student needs; individualized instruction; special uses for handicapped students; various applications, such as word processing and electronic spreadsheets; and interactive video.

The focus in this paper, however, will be on uses which, while perhaps not unique to science education, have particular potential for improving science instruction. The power of the computer in science education may be in the unique ways, some of which are indicated below, in which it can be integrated into the science curriculum. Even a single computer can be used in the classroom in a demonstration or as a laboratory station (13).

1. Simulations

A simulation is (a) a dynamic display that is based on a model, or (b) a simplified version of the actions and reactions of a system over time (11). An appropriate simulation will convey concepts that cannot be conveyed in a typical laboratory or field situation. Simulations permit the exploration of worlds too small, too fragile, too dangerous, or too complex for actual study in the classroom (14). There are many reasons why direct learning may not be possible (12):

a. the necessary equipment is not available because of the expense, or it is too complex or delicate to permit students to use it (for example, an electron microscope or the equipment to demonstrate Planck's constant);

b. the sample size in the real world is too small to permit generalization;

c. the experimental technique is difficult and must be developed over an extended period (for example, the Millikan oil drop experiment);

d. there are serious dangers to the student (for example, experiments using radioactive materials);

e. the time scale is too short or too long to permit the student to make observations (for example, plant succession or population genetics);

f. the opportunity to experiment directly is not available (for example, the study of van der Waals forces or dynamic equilibrium);

g. it is sometimes desirable to measure variables which are difficult to access (for example, activation energy or heat of reaction in chemistry reactions);

h. measurement and other noise may obscure important phenomena; and

i. there are times when it is useful to underscore the significance of natural laws by comparing their results with other laws.

Simulations should not substitute for hands-on experience if that is the best way to achieve outcomes. Rather, simulations should build on concrete experiences, as, for example, when students construct a classroom temperature field before engaging in a simulation which manipulates temperature fields on the floor of the mid-oceanic ridge. A particularly good use of simulations is in role-play gaming, where the computer processes data and students examine alternative courses of action, such as in operating a power plant or managing air or water quality. These simulations provide the student with a dimension of reality not possible without the computer (3). Other appropriate uses of simulations might be in such areas as population genetics and population growth.

2. Data manipulation and calculation

An electronic spreadsheet, a computer utility, can be used to reduce lengthy calculations where the concept is understood but cumbersome and repeated calculations must be undertaken. Database software packages allow easy manipulation of large amounts of data, and graphics software packages can be used to graph data quickly, often compiling data from all student lab stations. Statistical packages can provide simple statistical analysis without the complex series of calculations usually necessary. The concepts underlying these applications, however, must be understood before the student can actually use any of them.

3. Interfacing with laboratory equipment (microcomputer-based laboratories)

Automated, continuous data collection is a relatively new development in the use of computers in science instruction. Data can be collected and recorded using such equipment as thermistors, pH meters, electrodes, timers, light sensors, and photogates (13). Industrial and medical applications of computers can be illustrated, while more precise measurements can be obtained in such traditional laboratory activities as determining (in physical science) the period of a pendulum, acceleration due to gravity, variation of light intensity over distance, resonance and spectral analysis of sound, or (in life science) skin temperature, respiration rate, or heart beat.

4. Word processing for laboratory reports

While use of a computer for word processing is not unique to science education, using it for some laboratory reports may lessen the tedium of writing for students. If step-by-step guidelines for writing the report, such as the teacher would distribute at the beginning of the year, are incorporated into the software, a powerful aid to report writing is created for the student.

5. Data search and retrieval

Telecommunications, through the use of a modem, allows students access to many and varied sources of data. While this computer use is also not unique to science education, it allows retrieval and manipulation of scientific data not normally available to students. For example, using hydrological survey databases, students can work with actual data on current winter snow pack, spring run-off estimates, summer river flow, or projected dam releases.

6. Real-world experiences

Intensive programs for high ability students at university and industrial sites allow these students to experience the way in which computers and other high technology equipment are used in the sciences and in industry (2). Taught by scientists, these programs stress basic science principles through work with state-of-the-art scientific equipment, and, as a sidelight, promote career awareness.

7. Science, technology, and society

As students learn to use computers as tools, they should be helped also to understand the implications that computer use has for how they live their everyday lives and for society. When and as appropriate, discussion and exploration of the social issue surrounding computers should be undertaken.

Finally, there are several issues and concerns about the use of computers of which teachers should be aware as they plan for science instruction.

1. Effectiveness of the computer in instruction. To date, there has not been a great deal of research directed toward the effectiveness of the computer vis-a-vis other instructional methods (3). The computer as an instructional tool is a rapidly evolving area. Right now, many of our current applications of computers in science education are answers to old problems, but the potential of computers to solve problems of which we are only vaguely aware or to extend our capabilities in new ways has barely been explored (6). Teachers using computers in the classroom may want to think of themselves as researchers: discovering, hypothesizing, and testing new ideas for computer applications (6)--and what excitement in learning can be generated when students explore these new ideas and learn with the teacher. But, as a word of caution, we must await further research and assessment before we know the true effectiveness of computers in the science classroom.

2. Evaluation of software

   All software should be evaluated before it is used in the classroom. The Microcomputer Software Evaluation Instrument (9), available from the National Science Teachers Association (NSTA), and a software evaluation form in the September 1985 issue of Science and Children (10) allow teachers to rate a software package for its particular contribution to science education. With all software, teachers should insure that students are learning not just science content, but also the science processes, including problem solving and decision making. Software use should always be consistent with school policy and procedures.

3. Computer equity for students

   Unless special care is taken, research has shown that computers are likely to be used mainly by middle-class male students (14). Teachers should ensure that all students have equal access to computers across race, sex, socioeconomic status, and academic levels.

4. Integration into the curriculum

   In time, computers must become fully integrated into the science curriculum. While it will take much research and many resources to integrate the computer as fully as it has been in such programs as the Voyage of the Mimi, individual teachers should always ask this basic question: How is my classroom use of the computer advancing my overall instructional goals?

5. Interdisciplinary applications

   The Regents Action Plan for Elementary and Secondary Schools calls for interdisciplinary projects at every grade level. By their very nature, computers are natural means to interdisciplinary instruction, and teachers should consider them as one possible tool in such instruction.

6. Preparing students for the information age

Teachers have a responsibility in preparing students for the new technologies they will encounter outside of and beyond school. Students need to

- become comfortable with and develop com-petence in computer technology (3);
- be adaptable and develop problem-solving skills to cope with information overload and rapid advances in technology (4); and
- understand the uses, capabilities, and limitations of computer technology.

7. Hands-on and high tech

Computers should be used in a balanced environment. Computer technology should be balanced by hands-on, concrete activities (what John Naisbitt in Megatrends (8) calls "high touch"). As classroom use of computers increases, it may become necessary to compensate by providing more real-world, hands-on experiences, where students get their hands dirty and feet wet, and by encouraging the exchange of ideas, debate, and group participation within the science classroom (5). Computers should enhance, not inhibit, student interaction and discussion, for it is by reasoned discussion and social interaction that critical thinking and problem solving prosper.

References

1. The College Board. 1983. Academic Preparation for College: What Students Need to Know and Be Able to Do and Preparation for the World of Work. New York, NY: The College Board.
2. Edwards, R. E. and Ghose, H. 1985. "Hands-On and High Tech". The Science Teacher, 52 (No.9): 24-25.
3. ERIC. 1984. "Using Computers for Environmental Education." Information Bulletin, No. 3. Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.
4. Hurd, P. D. 1972. Educational Goals in Science for the 1970's. Palo Alto, CA: Stanford University.
5. Judd, W. 1983. "A Teacher's Place in the Computer Curriculum." Phi Delta Kappan, 65 (No. 2): 120-122.
6. Lloyd, L. A. 1984. "What role do computers and other technological advances play in science teaching?" in Research Within Reach: Science Education, eds. D. Holdzkom and P. B. Lutz. Charleston, WV: Appalachia Educational Laboratory, Inc.

7. Mandell, A. 1982. "Microcomputers in the science classroom and laboratory." Science Activities, 19 (No. 3): 26-28.

8. Naisbitt, John. 1982. Megatrends. New York, NY: Warner Books, Inc.

9. National Science Teachers Association. Microcomputer Software Evaluation Instrument. Washington, D.C.: National Science Teachers Association.

10. Reynolds, K. E. 1985. "How to Use the Software Evaluation Form." Science and Children, 23 (No. 1): 18-20.

11. Rowe, M. B., ed. 1982. Education in the 80's: Science. Washington, D.C.: National Education Association.

12. Visich, M. J. and Braun, L. 1974. The Use of Computer Simulations in High School Curricula. Stony Brook, NY: SUNY at Stony Brook. ED 089 740. From ERIC, Information Bulletin, No. 3 (see reference #3).

13. Wainwright, C. and Gennaro, E. 1984. "The One-Computer Classroom." The Science Teacher, 51 (No. 4): 59-63.

14. Walker, D. F. 1983. "Reflections on the Educational Potential and Limitations of Microcomputers." Phi Delta Kappan, 65 (No. 2): 103-107.

Bureau of Social Studies Education

*1986

How Can Computers Be Used in Social Studies?*

by Allen Glenn
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Computers can benefit the teaching of social studies in a wide variety of ways. The computer can be used as:

- a method of delivering content
- a tool for retrieving and analyzing information
- an example of technology use in society
- a tool for developing thinking skills
- a classroom management aid

By understanding each of these roles, teachers will gain a better understanding of the potential of computers.

Using the Computers to Deliver Content

Using computers as a tool for delivering content material to students is the most obvious application of this technology to the social studies. Past technologies such as movies, tape recorders, filmstrips and phonograph records have already been used for this purpose. In fact, one could even consider books as a technology of this nature.

Types of activities for delivering content include tutorial, in which new information is imparted; drill, in which knowledge of previously imparted information is tested; and simulation, in which students learn by experiencing a model of a real-life situation. These activities are common in social studies teaching and all apply to computer use.

Consider map reading skills as the subject of a computer tutorial. A paragraph on the screen explains a particular skill such as determining longitude and latitude. Then a graphic display, perhaps including animal motion, demonstrates locating a place using longitude and latitude readings.

Carrying this to the drill stage, the student is then asked to try two exercises. First, several places are shown on a map, and degree readings for each are to be entered. Second, the student is given degree readings and asked to locate them on a map by using selected computer buttons to move two cross hairs, one vertical and one horizontal. When these lines have pinpointed the location, the student presses another button and the computer determines the accuracy of the answer. A built-in checking feature keeps a record of student scores, so the teacher can later determine each student's progress.

How Can Computers Be Used in Social Studies?

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Computers have been particularly advantageous in presenting simulations. Effective simulations are based on complicated arithmetic models. The computer can carry out the arithmetic effortlessly so that the simulation participants can concentrate on the concepts of the activity.

There are two types of computer simulations. A role play simulation has the student play the role of a particular type of person in the simulated experience. For example, a simulation of crossing the Atlantic Ocean in the sixteenth century would ask students to put themselves in the place of a European explorer facing the hardships of a long voyage in primitive vessels. A simulation which involves manipulating societal factors has students step outside of human roles to control whole environments. For example, a simulation of the U.S. economy could ask students to change income, consumption or production to see what effect various factors have on the country. These types of simulations existed before computers entered the classroom. Computers allow some of them to be more easily and effectively implemented.

Using the Computer to Retrieve and Analyze Information

Most people associate computers with calculating, and many teachers have used computers in college work to analyze research data. These capabilities are also useful in the social studies classroom. Computers can tally numerical amounts, as in analysis of a simple opinion survey. Students can collect data by asking friends or family members opinion questions, while noting characteristics such as the sex and age of each respondent. This information from all respondents is then typed into a computer using an appropriate software package. The computer performs the necessary calculations to determine group response to each opinion item and to examine personal characteristics of people with the same opinion on an item. For example, a political survey might find first that most people favor Candidate A over Candidate B, and second that Candidate A is favored by more men than women, and by more younger than older people.

Computers can select information based on chosen characteristics. For example, a data collection for all countries can be created showing information such as location, type of political and economic system, etc. Students can then use the computer to investigate questions such as "Are there common characteristics among countries that have representative-type governments, or among those that have dictatorial-governments?" The student can direct the computer to list all countries having both a representative governmental system and those having a "free market" economy, or perhaps countries having dictatorial governments and controlled economies. The resulting information can lead the student to investigate information that would not have been apparent without the data analysis.

Information retrieval will play an increasingly important role in society's use of computers. Commercial ventures are already providing access to data bases for business, educational and home use. Such commercial information utilities allow users to peruse on-line newspapers, stock market data, and special-purpose electronic bulletin boards. They also provide a method of personal communication via computerized mail services. A school that subscribes to such a service can open to its students a large volume of information otherwise difficult to access. Social studies teachers can use the information as the focus of current events activities or to study key social factors such as the economy. Students need library skills in order to retrieve information from print and non-print media; likewise, data retrieval and analysis skills are critical as more information is stored and made accessible electronically.

Computers can also be used to predict events from past data by using an arithmetic model. For example, a model of population growth can be implemented on the computer. Students can then change certain variables, such as birth rate or average age of giving birth, to see what the effect will be on the population several years into the future. Perhaps some of these changes will result in slowing down the over-population problem in the world. This leads to discussion of what social policies are needed to implement recommended changes and whether such policies are indeed practical.

One mission of the social studies classroom is to show students how social scientists work to add to our knowledge. Social science today relies significantly on analysis of data, often using the computer. These applications, geared to an appropriate level, form the basis of valuable social studies activities.

Using the Computer as an Example of Technology Use of Society

The social studies endeavor to help students understand the world. In a world increasingly dependent on technology, an understanding of the social implications of technology becomes more important. Computers are at the heart of this new information technology. Having computers available facilitates teaching students about the technology that will influence their lives.

The very existence of computers in schools can be viewed as a metaphor for technology in society. Social studies activities can be built around discussion of the impact of computers on students' school life and whether similar impacts will be experienced beyond school. Students might compare school in their parents' time with school today and discuss how technology has contributed to the changes.

Computers are being used in all aspects of our society. While students can read about these uses in books, it is more effective if they can be experienced, at least in simulated form, using school computers. Computer simulations of computer applications in retailing, medicine, politics, communications, finance and other areas can help students better understand the computer's impact. The computer's impact on the formation of a global society fits well with the global studies component of many curricula.

The use of computer technology raises various social issues. Automation is eliminating some jobs and creating other new ones. This can create problems for a society. What effect will the resulting pool of unemployed people have on the economy and social institutions? How can these people be retrained for other jobs and who has the responsibility to do it? Who will fill these new types of jobs created, especially since they are likely to require new types of skills? How should the educational system respond in preparing students for an economy in which jobs are constantly changing?

Personal data is being stored on computers by the government and credit companies. Who decides what information is collected? Who verifies its accuracy? How can a citizen know what information is stored about him/her? What are the possible damages caused to an individual as a result of personal information being incorrect or misinterpreted? Who can view the personal information kept on an individual?

Computer-related crime costs consumers hugh amounts of money and is rarely detected. Companies often fail to maintain adequate security for their computer installations and the information stored there. Many times crimes are perpetrated by company employees whose activities go undetected due to the complexity of computer procedures. Computer criminals often fail to see the unlawfulness of their acts, feeling that if access to computer resources is left unguarded, it is legitimate to take advantage of it. Companies that do uncover criminal activity are hesitant to report it, fearing the negative publicity that will result. These factors contribute to the rapid growth of this technology-related problem.

Issues such as these can provide the basis for important classroom discussions. They can also be exemplified in simulated activities. Students can experience holding a job dependent on computer work, running a credit check on a classmate, or committing computerized embezzlement or company funds (admittedly a controversial activity).

A significant plus for computer-based activities in general is that they can be much more participatory for students than other methods of learning. An ideal way to take advantage of this characteristic is in teaching about the impact of technology itself. And exploration of social impact is well within the domain of the social studies.

Using the Computer to Develop Thinking Skills

Most subject areas include the development of students' thinking skills as an underlying goal. Logic and problem solving, and the ability to think creatively apply to social studies learning, and computer activities can contribute to the development of these skills.

Problem solving in social studies usually denotes the skill of interpreting information to make logical and effective decisions. Making decisions is at the heart of simulation activities such as those implemented on computers. In a simulation, the student is presented with a situation in which a problem exists or a goal is to be achieved. The student is given resources to assist in reaching the goal, a timeline of sorts, and rules of behavior. Reaching the goal within the limits of the resources and the bounds of the rules requires thinking skills. Many simulations add the aspect of group play, causing students to make their decisions in an environment of group dynamics. The current software includes three simulations that challenge students to run a company, find a sea route to an unexplored land, and cross a wilderness by covered wagon.

Simulations are based on models that try to approximate reality. Because these models often involve a series of arithmetic calculations, computers are helpful tools for presenting the activity. Use of a simulation can be enhanced if the teacher goes beyond discussing the simulated events to discussing the actual simulation model. Students could first be challenged to try to piece the model together based on observations of results from various decisions. The student might decide to run through the patterns and record results. What made money values rise and fall? What increased or decreased speed of travel? What generated more or less political influence for a group? A rough outline of the model could be deduced from answering such questions.

After this kind of practice, students might attempt to describe models of their own for how certain social phenomena behave. For example, what is the relationship between interest rates and the stockmarket?--between the economy and a president's popularity?--between employment levels and social unrest? Students can experiment in describing these admittedly imprecise relationships using simple arithmetic formulas. Students with a fundamental knowledge of computer programming might actually write small programs for the computer using these formulas.

Computer activities such as simulations relate to certain social studies content. Examining the workings of a simulation while using it to study content can form the basis for problem-solving activities as well.

Using the Computer to Aid in Management Tasks

In addition to directly enhancing the instructional process, the computer can help directly by simplifying a teacher's non-instructional tasks. For example, the teacher can use the computer as a word processor to prepare classroom materials. These materials can be printed, stored for later use, and easily modified using the computer. Specific computer software is used to generate special materials such as vocabulary exercises in the form of crossword or word-find puzzles. The teacher merely types in the words to be used. The computer formats the puzzle for printing and duplication. Not only do these applications save teacher time, but in so doing they encourage teachers to use a greater variety of materials, to use originally created materials, and to modify materials for different classroom situations.

Testing is another area in which computers save time. The teacher can store a bank of test items on the computer and have it create a test based on particular teacher-selected objectives. The computer can create different versions of the same test by randomly selecting the choice and order of test items. The computer can be used to print written versions of a test or to present the test directly to a student using the computer. In the latter case, the student's score can be calculated and recorded instantly.

Different types of record keeping can be accomplished using the computer. When test scoring is linked to the computer, both teacher and student can quickly obtain periodic records on student progress in meeting specific learning objectives. The teacher can use this data to diagnose problem areas and prescribe further activities geared to student needs. The computer can also be used to calculate and record final grade information. The computer can also take over the drudgery of the arithmetic for teachers who assign letter grades based on percentage calculations or curve distributions.

In performing management tasks as described above, the computer helps alleviate the teacher's routine paper work. This can help make the teacher's day more pleasant, and it can free teachers to spend more time interacting with students. Using some of these management aids is a good way to start exploring computer use.

The types of computer activities described in this overview define the scope of social studies computer use. Teachers who have not yet made extensive use of the computer in social studies will find great potential in its use in social studies programs.

*In Computing in the Social Studies Classroom (1984), a publication of the International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, Oregon 97403-1923 (used with permission).

Social Studies Microcomputer Courseware Evaluation Guidelines

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Social Studies Microcomputer Courseware Evaluation Guidelines

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This document was produced by the Ad Hoc Committee on Computer Courseware Evaluation Guidelines for the National Council for the Social Studies. The authors are: Stephen A. Rose, Chairperson, University of Northern Iowa at Cedar Falls; Allan R. Brandhorse, University of South Carolina at Columbia; Allen D. Glenn, University of Minnesota at Minneapolis; James O. Hodges, Virginia Commonwealth University, Richmond; and Charles S. White, Indiana University at Bloomington.

Social studies educators at all levels are employing the microcomputer in a variety of instructional settings. Many social studies educators have little difficulty locating microcomputer hardware that can be used effectively in the classroom. Unfortunately, the same cannot be said about courseware ("software" designed for use in a course of study). While a multitude of educational courseware is available, identifying that courseware most useful for achieving social studies goals and objectives is often problematic. Even the existence of numerous generic courseware evaluation instruments has not made things easier, primarily because these instruments do not focus on the specific goals of the social studies. It was in response to this concern that the National Council for the Social Studies developed guidelines to evaluate and select social studies related courseware.

These guidelines contain three broad categories of questions -- knowledge, skills and values. The implied criteria in the questions have been drawn from the "NCSS Social Studies Curriculum Guidelines," "Curriculum Guidelines for Multiethnic Education," and "Essentials of the Social Studies." Collectively, these documents outline a variety of roles the social studies play in preparing youth for full participation in society. Social studies, for example, should specify goals that go beyond the acquisition of academic content and seek to develop learners who have the personal, social and intellectual skills needed for both citizenship and effective participation in society. Moreover, it is essential that social studies programs have students develop a realistic picture of themselves, examine their own values and value systems, and increase their reading, writing, thinking, and speaking skills. Additionally, the social studies curriculum should help students understand and appreciate cultural diversity throughout the world and develop the capacities for working cooperatively with others. Lastly, social studies education is directly concerned with the development of students' understanding the body of knowledge developed and refined by historians and social scientists. This includes important facts, concepts, generalizations and skills that permit students to explain and describe social phenomena affecting their lives.

Computer courseware materials must be evaluated carefully in two stages. First, educators need to determine whether or not a particular set of materials is appropriate for use in the social studies classroom. These guidelines address that need: they contain criteria derived from the goals and purposes most appropriate to social studies. Second, while judging the value of a set of computer courseware as it relates to the goals of social studies, educators must also confront technical and instructional issues. There are many excellent evaluation guidelines already available for this purpose, including the "Evaluator's Guide to Microcomputer Based Instructional Packages" published by MicroSoft and "Guidelines for Evaluating Computerized Instructional Materials" by the National Council of Teachers of Mathematics. These and other such evaluation instruments are identified at the end of this document.

The two-stage evaluation process described above, with one stage focusing on the courseware's relationship to the overall goals of the social studies and the other on the technical/instructional issues, is an integral process. By assuring that both stages receive careful attention, the social studies educator should be able to determine whether a particular set of computer courseware should be used, and if so, where and how. The final goal is the selection of computer courseware that meets the instructional goals and objectives of a particular social studies teacher.

The guidelines are organized around three areas -- Knowledge, Skills, and Values -- each of which contains organizational descriptors. A checklist has been included to help evaluators monitor the extent of emphasis a courseware package places on each criterion. The checklist contains four headings -- Strong Emphasis (SE), Moderate Emphasis (ME), Inadequate Emphasis (IE), and Not Applicable (NA). When using the checklist, it is important to realize that the breadth of criteria in this document and the variety of courseware on the market preclude a single courseware package from meeting all the standards in these guidelines.

Knowledge

Social studies educators at all levels have rejected a curriculum based exclusively on the behavioral and social sciences. Instead, they have adopted a broad-based curriculum that not only addresses the concerns of those academic disciplines but concentrates on the personal and social concerns of the student, as well as the multicultural and normative concerns of society.

SE	ME	IE	NA		Significant Characteristics
				1.01	Validity Does the courseware emphasize currently valid knowledge from one or more of the social sciences?

SE ME IE NA **Significant Characteristics**

1.02 Accuracy
Does the courseware present a true and comprehensive body of content, free of distortion by omission?

1.03 Reality Oriented
Does the courseware's content deal with the realities of today's world in terms of its flaws, strengths, dangers and promises?

1.04 Significance of Past and Present
Does the courseware deal with important concepts, principles and theories of modern society? Does it present significant ideas that convey the excitement of the past, present and future?

1.05 Bias
Does the courseware avoid bias and/or stereotyping with regard to gender, ethnicity, racial background, religious application or cultural group? When unfamiliar customs and institutions or different ethnic groups and cultures are dealt with, are they presented in an unbiased and objective manner?

Content Emphasis

1.11 Issue Analysis
Does the courseware engage students in analyzing and attempting to resolve social issues? Is a data base provided and does it contain information of sufficient depth and breadth for students to make realistic decisions? If not, can the database be expanded by the teacher or student?

SE ME IE NA **Significant Characteristics**

If not, can the data base be expanded by the teacher or student?

1.12 Pervasive and Enduring Issues
Does the coursesware focus on problems and/or issues that are socially significant? Do the materials demonstrate the reciprocal relationships among the social sciences, social issues and action?

how to learn--to develop self-direction in gaining meaningful knowledge and employing it effectively. The social studies program should develop the students' ability to make rational decisions. In order to accomplish this, it is essential that students acquire skills in critical thinking, inquiry, information processing, and problem solving.

SE	ME	IE	NA		Intellectual Skills
				2.01	Inquiry and Problem Solving Does the courseware pose problems which require students to use the methods of inquiry? Specifically, are students given practice in: identifying and defining problems, formulating and testing hypotheses, and arriving at valid generalizations?
				2.02	Critical Thinking Does the courseware foster the development of critical thinking skills of distinguishing between fact and opinion, detecting slant and bias, determining cause and effect, and evaluating the reliability of sources?
				2.03	Higher Cognitive Levels Does the courseware help students develop and/or reinforce the thought processes of analysis, synthesis and evaluation? Do students SEMEIENA Intellectual Skills encounter material that helps develop their understanding of the relationship between elements and how these elements fit together as a whole? Are students given opportunities to use information to construct a new communication? Are students asked to make judgments based on appropriate criteria?
				2.04	Divergent Thinking Does the courseware encourage divergent thinking which allows students to provide a variety of answers for difficult questions?
				2.05	Concept Formation Does the courseware present a broad range of illustrations, models, and examples which are appropriate for helping students image, dissect, conceptualize, define, or recognize relationships between patterns or concepts?

SE ME IE NA **Significant Characteristics**

1.13 Global Perspectives
Does the courseware help students develop a global perspective? Are students assisted in recognizing the local, national and global implications of the problems examined and their possible solutions?

1.14 Development of Society
Does the courseware develop knowledge and insights into the historical development of human society? Do the facts, concepts, principles and processes presented offer direction in organizing a study of human behavior? Does it help students understand: how modern societies develop, the role of central institutions and values of national societies and those of the world community?

1.15 Multiculturalism
Does the courseware help develop an understanding of the diversity of cultures and institutional arrangements within American society and in other societies within the global community? Does it provide a rational explanation for customs and other distinctive aspects of daily life arrangements that are explored? Does it contribute to the students' acceptance of the legitimacy of their own cultural identity as well as that of others?

1.16 Personal/Social Growth
Does the courseware help students understand their own development and capabilities, as influenced by their families, peer groups, ethnic groups, media, and the society at large?

Skills

Social studies education should provide students with the opportunities to develop, practice, and use a variety of thought processes and skills. Students should have opportunities to probe, to extract knowledge from experience, to think and to communicate their findings and conclusions, both orally and in writing. They should learn

SE	ME	IE	NA		Decisionmaking Skills
				2.11	Processes Does the courseware develop decisionmaking skills of identifying alternatives, establishing criteria to evaluate alternatives, evaluating the alternatives in light of criteria and making the decisions? Are students given the opportunity to re-test, re-interpret, and re-organize their beliefs about facts and values?
				2.12	Learning Environment Does the courseware and its accompanying materials create a social environment populated by believable characters confronting difficult circumstances and choices?
				2.13	Choices Does the courseware require the student to make choices, SEMEIENA Decisionmaking Skills and are those choices then used as data for reflection?
				2.14	Information Base Does the courseware's data match the kind of data that would be accessible by citizens outside the instructional context? Is the courseware flexible enough to allow the alteration and addition of information, so that students can practice making decisions under a variety of factual and value circumstances?
				2.15	Consequences Does the courseware confront students with realistic consequences (for themselves and for others) of decisions they are required to make in using the courseware?
				2.16	Assessment Does the courseware and its accompanying materials assist the teacher and the student to assess the latter's skills and abilities in decisionmaking?

SE ME IE NA **Decisionmaking Skills**

2.17 Degree of Certainty
Does the courseware provide experiences in making decisions under conditions of uncertainty? Does the courseware help the student recall the basis on which decisions were made and to make revised decisionsinformed by new understandings?

SE ME IE NA **Information Processing Skills**

2.21 Orientation Skills
Does the courseware foster the development of map and globe skills?

2.22 Chronology and Time Skills
Does the courseware provide students practice in interpreting chronology and applying time skills, i.e., sequencing events and trends, and SEMEIENA Information Processing Skills identifying and using measures of time correctly?

2.23 Graphic Data Skills
Does the courseware help students develop skills of reading and interpreting, constructing and drawing inferences from graphs, tables and charts?

2.24 Gathering and Processing Data
Does the courseware provide opportunities for students to develop skills in locating, organizing, interpreting and presenting data?

2.25 Content Reading Skills
Does the courseware facilitate the development of the student's word attack skills and the ability to read on the literal, interpretative and applied levels?

2.26 Communication Skills
Does the courseware or its accompanying materials foster adequately developed communication skills and provide opportunities for communicating effectively orally an in writing?

SE ME IE NA Communication and Participation Skills

2.31 Interaction
Does the courseware and its accompanying materials require groups of students to work together? Do the learning tasks require a division of labor? Does successful completion of the tasks require shared information?

2.32 Cooperation
Does the courseware and its accompanying materials reinforce the importance of, and provide support for, cooperation in resolving conflicts over contradictory facts and values?

2.33 Social/Political Participation
Does interaction with the courseware and its accompanying materials enhance the student's ability to participate effectively in the social and political processes of his/her school and community?

2.34 Follow-up Activities
Does the courseware or its accompanying material offer suggestions for activities that follow logically from the use of the courseware? Does the courseware allow students to experience vicariously the positive and negative consequences, the costs and benefits, the frustrations and satisfactions of taking action?

Values

The cultural pluralism characterizing American society makes value conflicts inevitable. These conflicts are particularly evident in debates about solutions to complex social problems confronting our society. Effective participation in resolving these problems requires people who have rationally developed their own value system, and are proficient at making defensible value decisions.

Social studies education should provide ample opportunities for students to rationally examine value issues in a non-indoctrinating environment. Additionally, it should promote the reflective examination of value dilemmas that underlie the personal and social issues that students confront in their everyday lives.

SE ME IE NA

Societal Orientation

3.01 Influence of Values on Behavior
Does the courseware help students develop an understanding and appreciation of the influence of beliefs and values on human behavior patterns?

3.02 Procedural Values
Does the courseware help the student identify and develop an appreciation for values that underlie substantive beliefs and procedural guarantees expressed in this nation's fundamental documents?

SE ME IE NA

Valuing Processes

3.11 Beliefs
Does the courseware require the student to identify his of her own beliefs, to make choices based on those beliefs, and to understand the consequences of the choices made?

3.12 Conjoint Reflection
Does the courseware require conjoint reflection on feelings, behaviors and beliefs?

3.13 Defensible Judgments
Does the courseware support a process of value analysis by which learners can make rational, defensible value judgments?

3.14 Feedback
Does the courseware track the process students use in making value judgments and provide useful feedback with respect to its quality and improvement?

Systems for Evaluating Technical and Instructional Courseware Issues

Computer Library Media Consortium for Classroom Evaluation of Microcomputer Courseware, 1983. San Mateo County Office of Education, 333 Main Street, Redwood City, CA 94073. Phone (415) 363-5400. (A three-page untitled evaluation reporting form.)

Dennis J. Richard (1979), Evaluating Materials for Teaching with a Computer, includes "Courseware Evaluation Worksheet." The Illinois Series on Educational Application of Computers, No. 5e, Department of Secondary Education, University of Illinois at Urbana-Champaign.

Douglas, Shirley and Gary Neights. A Guide to Instructional Microcomputer Software, includes "Microcomputer Software Evaluation Form." Instructional Materials Service Programs, Pennsylvania Department of Education, Box 911, 333 Market Street, Harrisburg, PA 17108. Phone (717) 783-2528.

Evaluating Instructional Computer Courseware; Materials Review and Education Center, Division of Educational Media, Department of Public Instruction, Raleigh, NC.

Evaluation Guide for Microcomputer-Based Instructional Packages. Developed by MicroSift, the Computer Technology Program, Northwest Regional Educational Laboratory, Published by International Council for Computers in Education, Dept. of Computer and Information Science, University of Oregon, 1982.

Heck, William P. et al. Guidelines for Evaluating Computerized Instructional Materials. The National Council for Teachers of Mathematics, Inc. Reston, VA 1981.

Rosenstock, Robert, Norman Dodl and John Burton. Education Microwave Assessment: Criteria and Procedures for Evaluating Instructional Software. Education Microcomputer Laboratory, Room 400, War Memorial Gym, Virginia Tech, Blacksburg, VA 24061. Phone (703) 961-5587.

Smith, Richard A. (ed.) Guidelines for Software Evaluation, Department of Technology, Houston Independent School District, Houston, TX (a four-page questionnaire).

Division of Language Skills

Bureau of English and Reading Education

Computers in the English Language Arts

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(518) 474-5029

Computers in the English Language Arts

There are several reasons why computers and word processors are appropriate tools for teaching the English language arts:

- The teaching of English emphasizes process--the process of composing, the process of comprehending, the process of responding to literature, the process of critical thinking. The power of the computer to manipulate symbols, words, sentences or data easily, by students of all ages, makes the computer a natural vehicle for facilitating and strengthening the processes of the mind.

- Language learning is active, engaged and personal. Software programs which encourage peer interaction and promote language play come close to Seymour Papert's vision of a computer as "a mudpie", performing uncritically and flexibly as students explore and manipulate the patterns and functions of language.

- The writing process is, by its very nature, formless and cumbersome. The capacity of the computer to store large quantities of text; to allow the user to insert, delete, and rearrange material; and to match the text against spelling checks or style analyzers, enables students to discover what they have to say, bring shape to their writing, and perform the final polishing with a minimum of fuss.

- English is a multi-faceted discipline which demands a lot of its teachers: managing large numbers of students with widely-divergent needs and abilities, reading and responding to quantities of (often illegible) papers, doing justice to all five strands of the language arts and capitalizing on the connections between them. Used appropriately, computers can save time, provide periodic reports of progress, make possible greater individualization, and help teachers manage students and instruction more effectively.

Software Evaluation

Deciding whether a specific software package is suitable for specific classroom applications requires an understanding of curriculum standards and guidelines. In addition to the general evaluation criteria listed in the Bureau of Technology Application's publication, "Guide to Software Selection Resources", created by the Center for Learning Technologies, criteria specific to the English language arts can be gleaned from descriptions of program goals. Using the National Council of Teachers of English document "Essentials of English" as a guide, the following criteria emerge:

- Does software used for writing instruction:

  reflect an understanding of writing as a process of communication, as well as a way to discover and activate ideas?

help students generate ideas for writing, select and arrange those ideas, find appropriate modes for expressing them, or evaluate and revise the written product?

help students recognize that precision in punctuation, capitalization, spelling and other manuscript conventions is a part of the total effectiveness of writing?

- Does software used for reading instruction:

help students learn to approach reading as a search for meaning?

help develop the necessary reading skills to comprehend connected text in a variety of forms?

demonstrate that reading functions as a pleasurable activity as well as a means of acquiring knowledge?

help students to read accurately and make valid inferences?

elicit personal and/or critical responses to literature?

provide students with strategies for organizing, responding to, or crystallizing textual information, rather than merely serving as a vehicle for displaying that information?

- Does software used for language instruction:

help students recognize language as a powerful tool for thinking and learning?

illustrate the ways in which grammar represents the orderliness of language and makes meaningful communication possible?

demonstrate how topic, purpose and audience influence the structure and use of langauge?

help students learn how the English language has developed, continues to change, and survives because it is adaptable to new times?

provide opportunities for using language beyond the letter, word and sentence levels?

- Does software designed to promote thinking skills:

help students analyze, classify, compare, formulate hypotheses, make inferences and draw conclusions?

promote creative thinking by providing opportunities to bring fresh perceptions to familiar ideas?

encourage logical thinking by providing opportunities for constructing arguments, detecting fallacies in reasoning, and testing the validity of an assertion by examining the evidence?

foster critical thinking by requiring students to ask questions, discriminate between fact and opinion, and evaluate the intentions and messages of speakers and writers?

Some Caveats

Like the other tools of the classroom, the computer can play a valuable role in supporting teachers' creative teaching and students' creative learning. At the same time, some caveats are in order:

- A computer-managed program of instruction will be no stronger than the nature of the instruction being managed. Computer-assisted instruction is not a substitute for instruction in literature, composition, language, listening and speaking. Neither is teacher inservice in computers a substitute for teacher inservice on the writing process or the other language arts.
- Computer use is not a sixth strand of the language arts. Rather than devoting large chunks of time to teaching students to use the computer, students should be taught what they need to know. Instruction in how to move text around, handle footnotes, do a global search, or use a spelling check is more likely to have meaning if undertaken when the need arises.
- It goes without saying that any computer use should complement the course of study. In a classroom that stresses reading and writing as interactive, multi-dimensional processes, it is inappropriate to devote instructional time to isolated skills just because those skills are easy to computerize.
- Finally, there is no substitute for a good teacher. Unless the software saves time, makes a hard task easier, or serves more students, then it can't do the job as well as the teacher can.

Bureau of Foreign Languages Education

The Use of Computer Technology in Second Language Education

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The Use of Technology in Second Language Education

The greatest challenge facing foreign language educators is their responsibility for the development of real and practical communication skills in a second language by a varied school population. While intent on making a powerful contribution to all the overarching goals which sustain the Regents Action Plan, foreign language teachers remain primarily concerned with the achievement of these communication skills. For many teachers this may imply varying degrees of change from previous instructional practices.

The search for resources to support the achievement of communication objectives has focused on the development of more effective instructional materials and methods. In many cases, the application of available technologies to these materials and methods remains problematic in the light of issues of availability of appropriate hardware and software. In the context of applications of technology to second language skill development, the value of computers does not overshadow the known potential of other technologies such as those which traditionally have provided learners access to authentic samples of languages as models and stimuli for skill development activities. The known benefits of recorded samples of languages have been enhanced considerably by the multi-sensory qualities provided relatively recently by the wide availability of video recorders. At present, the greatest promise of technology for second language learning and teaching may indeed be held by the potential marriage of the microcomputer with such multi-sensory program sources as video cassette recorders, video disk players, and by the eventual widespread use of earth stations for instant television communication via satellite with interlocutors around the world. These applications of technology will provide multi-sensory communications which will turn language acquisition activities from contrived exercises to actual opportunities to deal with the substance of other peoples' feelings, thoughts and convictions.

Present Applications

In the meantime, the majority of present applications of available technology fall somewhat short of this ideal. The samples of language used in the classroom remain of the type specifically designed for instruction and often lack cultural and linguistic authenticity and depth. The use of the computer remains largely limited to drill and practice activities. Although useful and at times necessary, drill and practice remains but a small part of the communicative approach which emphasizes creativity and originality in the resolution of communication problems.

Despite Glyn Holmes' caution that the benefits to be derived from the computer in second language learning may not justify the necessary expansion of time, energy and money and that the use of the computer is not its own de facto justification, the fascination of learners with the technology and its implicit value as a motivation tool requires that we attempt to overcome its present limitations. Using Computers in Teaching Foreign Languages, by Hope, Taylor and Pusack in the CAL ERIC Language in Education series provides a current and comprehensive assessment of the use of computers in second language education. The inability of the computer to handle natural language is seen as a major hurdle and "Anyone just embarking on an exploration of what computers can do for language teaching will soon be astounded by the limited range of fundamental operations most computers can perform. The computer languages built into most small computers have a fairly versatile arsenal of techniques for handling mathematical functions but a rather primitive set of tools for handling information. . . . For the purposes of CAI, the fully automated processing of freely created sentences is only a dream. In one fashion or another, language-teaching programs drastically reduce the range of valid sentences the students can produce, and thus simplify the computer's analytical task. Right/wrong and multiple-choice questions are common solutions that usually fail to satisfy most teachers. Short-answer drills are popular and can be quite effective, yet it should be understood that programs that manage to handle even the verb system of a single language strain the capacity of small computers."

The most commonly used foreign language programs are of a drill and practice nature focusing on single elements of vocabulary and grammar merely because they are the most widely available, not because of their relative importance in the overall instructional process. They are the most widely available because, relying on discrete items requiring one single right answer and a very limited number of anticipated wrong answers, they are the easiest ones to program. Their major drawback is that the successful completion of such exercises bears little resemblance to the negotiation of meaning in the dynamic interaction implied by the widely endorsed communicative approach. The less widely available problem solving, simulations and games programs represent a considerable step forward because, although still limited primarily to single word responses, they require a more comprehensive approach to language. All these programs essentially address learning needs related to the written language in reading and in limited aspects of writing. Simulations also offer an opportunity to address the cultural aspects of language.

In addition to using published programs, foreign language authoring systems provide teachers the opportunity to produce exercises that are better adapted to their instructional process. Word processing and electronic mail applications of the micro-computer also offer interesting possibilities which deserve more widespread and more systematic exploration.

The application of the computer to the development of the speaking and listening skills requires the addition of sophisticated peripheral equipment to produce authentic language samples as models and stimuli and to record students' responses. The use of random access audio and video, digitized speech and synthetic speech remain at the experimental level in this area. Because of the computer's inability to recognize, let alone analyze speech in the almost infinite forms which may amount to the appropriate resolutions of relatively few and simple communication problems, the teachers remain alone in facing the overwhelming task of analyzing the considerable amount of language generated by an average size class in as little as ten to fifteen minutes of work with a computer.

State Education Department's Role

It is important for the State Education Department to promote both the appropriate use of existing technology and the development of software that makes the best possible use of emerging technology for the future.

Encouraging developments are occurring in New York State and across the foreign language teaching profession:

- A still very small but steadily growing number of schools have equipped themselves with satellite dishes which give them access to foreign language television programming. These programs are the source of authentic uses of the language among native speakers which teachers seek to bring that extra sense of reality to their panoply of instructional materials.

- Software such as Système-D and programs such as Project ICONS have become available which offer the promise of more "communicative" applications of technology. Système-D: Writing Assistant for French from Heinle & Heinle is a word processing software package which provides instant access on screen to extensive lexical, grammatical, and usage helps. This liberates the student writing in French from confining concerns over language accuracy to focus on content and creativity. Project ICONS, from the University of Maryland, is a foreign policy/foreign language simulation exercise which involves students from different schools in extensive negotiations in English and in Spanish on current international issues using the Telenet or the NSFNET computer communication networks.

- The New York State Education Department collaborates with the Copen Foundation on a project which links 12 New York State secondary schools with 12 schools in the Soviet Union so that they may interact on educational issues, concerns, and programs using electronic mail and videophones.

Resources

Many important resources remain untapped. One may wonder if a school district that is reluctant to spend a few hundred dollars on some foreign language periodicals or audiovisual materials might not more readily spend that money to access the huge foreign language databases and services available through systems such as the French Minitel or to use France-TV which features television coverage of current issues and events, and matching, on-line computer based instructional materials.

Research

Very little research has been aimed at assessing the effectiveness of computers in second language, although much research has scrutinized students' attitude in relation to their use. The very positive reaction of students to the use of computers requires that this motivating factor be exploited whether other more objective gains are available or not. In order to maximize benefits to be derived from the use of computers, their applications which contribute most effectively to the development of the various communication skills must be objectively identified by research.

Guides should be developed to help teachers make use of computers in a manner commensurate with their known contribution to the development of the various components of communication rather than because of their mere availability. Teachers and educational agencies should be encouraged to collaborate closely with producers and manufacturers in the development of technology and software which address most effectively the needs of the learners.

Division of Occupational Education Instruction

Bureau of Agriculture, Trade and Technical Programs

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Agriculture, Trade, and Technical Programs

AGRICULTURAL EDUCATION VIA SATELLITE TELECOMMUNICATIONS

Description of Project Goals/Objectives:

A two-year project has been designed to telecast full-year Agricultural Education courses to thirty-two selected pilot sites in New York State. It is a means to prepare and encourage more students to seek careers in the Agricultural Sciences in order to alleviate the critical employment shortages in this field. It will present a new curriculum approved by the New York State Board of Regents. A special focus of the project will be to deliver this course of study to students in urban, suburban, and rural schools where access to on-site programs is not made available. An administrative networking structure has been designed to ensure an effective and efficient delivery system and project longevity. Training programs will be conducted for administrators, teachers and other professionals involved in the project. Implementation is contingent on funding availability.

Target Audience:

Secondary students in grades 9-12

Department Contact Person:

Dan Moskwa, Associate
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Agriculture, Trade and Technical Programs

CAREER AWARENESS

Description of Project Goals/Objectives:

Career opportunities in the trades area.

Target Audience:

Students, parents, and teachers.

Department Contact Person:

Alan Silverman
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

Scope Notes:

Program is an industry driven program focusing on careers in the trades.

Program thus far consists of 3 TV and radio commercials which will appear statewide starting March 1989; 2 Career Videos-Careers in Bio-Tech related jobs and Careers in High Tech Industries; and a number of camera ready newspaper and poster advertisements.

Office of General and Occupational Education
Division of Occupational Education Programs
Bureau of Agriculture, Trade and Technical Programs

EDUCATION AND INDUSTRY ALLIANCE RESOURCE AND DEVELOPMENT CENTER FOR ELECTRONICS AND ELECTROMECHANICAL

Description of Project Goals/Objectives:

EIA's mission is to provide instructional expertise and state-of-the-art training in each cluster area. Because it is a clearinghouse with statewide support, EIA can recruit instructors who are renowned experts from both industry and education and can develop unique instructional systems that meet particular training needs. Scheduling is flexible with each center providing classes at times that best suit the user. Every effort is made to arrange sessions that accommodate the varying needs of education, industry, and service personnel. Workshops can be half-day, week-long, weekend, evening, summer. Whenever the need, EIA responds!

Target Audience:

Teachers and industry.

Department Contact Person:

Alan Silverman
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

Sheryl Rosenbloom
Corning Community College
27-28 Denison Parkway West
Corning, New York 14830
(607) 962-9457

Scope Notes:

Whether you're interested in creating a printed circuit board from an image on a PC, troubleshooting and repairing microprocessors and computers, or experiencing the hands-on programming of an industrial robot, EIA's Center at Corning Community College's Business Development Center is there to serve you. To date, activities have focused on:

- Digital electronics
- Microprocessors/computers
- Programmable controllers
- Linear electronics
- Fiber optics

- Computer-aided manufacturing (CAM)
- Robotics
- Electronics of automation
- Computer repair
- Home entertainment electronics repair
- Appliance repair

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Agriculture, Trade and Technical Programs

EDUCATION AND INDUSTRY ALLIANCE RESOURCE AND DEVELOPMENT CENTER FOR CAD, GRAPHICS AND VISUAL COMMUNICATIONS

Description of Project Goals/Objectives:

EIA's mission is to provide instructional expertise and state-of-the-art training in each cluster area. Because it is a clearinghouse with statewide support, EIA can recruit instructors who are renowned experts from both industry and education and can develop unique instructional systems that meet particular training needs. Scheduling is flexible with each center providing classes at times that best suit the user. Every effort is made to arrange sessions that accommodate the varying needs of education, industry, and service personnel. Workshops can be half-day, week-long, weekend, evening, summer. Whenever the need, EIA responds!

Target Audience:

Teachers and industry personnel.

Department Contact Person:

Bob LaCasse
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

Ms. Karen Madsen
Broome Community College
P.O. Box 1017
Binghamton, new York 13902
(607) 771-5337

Scope Notes:

Professionals in CAD, graphic arts, printing, commercial art, and photography look to the Resource and Development Center at Broome Community College for a wealth of information on the latest innovations and research in these cluster areas. To date, activities have focused on:

- PC and mainframe CAD
- Computers and commercial art
- Printing using laser scanners, digital color separators, photo typesetting, and updates on lithographic techniques
- Imaging science, color measurement, photographic instrumentation and materials

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Agriculture, Trade and Technical Programs

EDUCATION AND INDUSTRY ALLIANCE RESOURCE AND DEVELOPMENT CENTER FOR AUTOMOTIVE, HEAVY EQUIPMENT AND OUTDOOR POWER

Description of Project Goals/Objectives:

EIA's mission is to provide instructional expertise and state-of-the-art training in each cluster area. Because it is a clearinghouse with statewide support, EIA can recruit instructors who are renowned experts from both industry and education and can develop unique instructional systems that meet particular training needs. Scheduling is flexible with each center providing classes at times that best suit the user. Every effort is made to arrange sessions that accommodate the varying needs of education, industry, and service personnel. Workshops can be half-day, week-long, weekend, evening, summer. Whenever the need, EIA responds!

Target Audience:

Teachers and industry.

Department Contact Person:

Dick Barnwell
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

Don Goodman
Career Training Center
7150 Morgan Road
Liverpool, New York 13090
(315) 451-6054

Scope Notes:

"High tech" instruction keeps pace with the sophisticated advances in the automotive, heavy equipment, outdoor power, and related industries. Training for the future is made possible by labs throughout the state that feature the latest in computerized testing and diagnostic equipment. An additional aid is the wide collection of handbooks and manufacturers' data located in the Materials Literature Center at Morrisville College. To date, activities have focused on:

- Upgrading on-line technicians and support personnel
- Developing teaching skills for teachers
- Setting up satellite training throughout the State
- Troubleshooting basic and computer-controlled systems
- Analyzing engine performance and chassis alignment
- Repairing and refinishing vehicles

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Agriculture, Trade and Technical Programs

TOP (TEACHING FOR OCCUPATIONAL PROFICIENCY)

Description of Project Goals/Objectives:

A computerized program consisting of 27 diskettes which establishes the standards for the delivery and curriculum planning of Trade and Industrial Education programs.

Target Audience:

Teachers and industry programs.

Department Contact Person:

Bob LaCusse
New York State Education Department
Room 1621 OCP
Albany, New York 12234
(518) 474-4802

Field Contact Person:

T & I Resource Person
Local BOCES Center

Scope Notes:

The software program is designed to cope with the changing situations in the delivery of T & I subject areas. TOP helps those who administer, deliver and receive trade and industrial instruction master change.

Bureau of Business and Health Occupations Programs

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Business and Health Occupations Programs

BUSINESS ANALYSIS/BUSINESS COMPUTER APPLICATIONS INSERVICE PROGRAM

Description of Project Goals/Objectives:

A hands-on instructional program designed to familiarize teachers with the Business Analysis/Business Computer Applications course and the corresponding computer-related technologies contained in the curriculum.

Target Audience:

Business/Marketing Education teachers.

Department Contact Person:

Robert A. Jaffarian
New York State Supervisor
Business Education Unit
Room 1615 OCP
Albany, New York 12234
(518) 474-6240

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Business and Health Occupations Programs

COMPUTERIZED FINANCIAL INFORMATION PROCESSING/ACCOUNTING INSERVICE PROGRAM

Description of Project Goals/Objectives:

A hands-on instructional program designed to familiarize teachers with the corresponding computer-related applications contained in both the Financial Information Processing and the Accounting curriculum.

Target Audience:

Business/Marketing Education teachers.

Department Contact Person:

Robert A. Jaffarian
New York State Supervisor
Business Education Unit
Room 1615 OCP
Albany, New York 12234
(518) 474-6240

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Business and Health Occupations Programs

ELECTRONIC INFORMATION PROCESSING INSERVICE PROGRAM

Description of Project Goals/Objectives:

A hands-on instructional program designed to familiarize teachers with the Electronic Information Processing course and the corresponding computer-related technologies contained in the curriculum.

Target Audience:

Business/Marketing Education teachers.

Department Contact Person:

Robert A. Jaffarian
New York State Supervisor
Business Education Unit
Room 1615 OCP
Albany, New York 12234
(518) 474-6240

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Business and Health Occupations Programs

NURSE ASSISTING FIELD-TEST-SCHOOL INSERVICE
MEDICAL ASSISTING FIELD-TEST-SCHOOL INSERVICE
DENTAL ASSISTING FIELD-TEST-SCHOOL INSERVICE

Description of Project Goals/Objectives:

Demonstration of curriculum-related software programs and hands-on computer training with an instructor.

Target Audience:

Health Occupations teachers.

Department Contact Person:

Jeanette Canaday
New York State Education Department
Room 1615 OCP
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(518) 474-6240

Field Contact Person:

Scope Notes:

Bureau of Home Economics and Technology Education

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Home Economics and Technology Education

CADD INSERVICE PROGRAM

Description of Project Goals/Objectives:

A computer-aided design and drafting inservice program.

Target Audience:

Technology Education teachers.

Department Contact Person:

John Fabozzi
New York State Education Department
Room 1619 OCP
Albany, New York 12234
(518) 474-3954

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Home Economics and Technology Education

INTRODUCTION TO TECHNOLOGY - GRADES 7 & 8

Description of Project Goals/Objectives:

The Division of Occupational Education Instruction has developed curricula for the 7th and 8th grade course entitled "Introduction to Technology.," Technology education means a program of instruction designed to develop an understanding of systems in fields such as production, transportation, construction, communications and agriculture by emphasizing applied activities through working with tools, machines and devices used in the home and workplace.

Target Audience:

Teachers, administrators, and students.

Department Contact Person:

Mr. John Fabozzi
New York State Education Department
Room 1619 OCP
Albany, New York 12234
(518) 474-3954

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Home Economics and Technology Education

PRINCIPLES OF ENGINEERING

Description of Project Goals/Objectives:

The development of a one-year pre-engineering course for academically able 11th and 12th grade students; identification and training of a corps of teachers to implement deliver the program; and the implementation of the program statewide.

Target Audience:

11th and 12th grade students who are taking Regents level math and science courses.

Department Contact Person:

John Fabozzi
New York State Education Department
Room 1619 OCP
Albany, New York 12234
(518) 474-3954

Field Contact Person:

Scope Notes:

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Home Economics and Technology Education

TechNet: TELECOMMUNICATIONS FOR TECHNOLOGY EDUCATORS

Description of Project Goals/Objectives:

TechNet is an interactive computer-based network through which Technology educators can share learning activity ideas, test questions, and curriculum materials statewide. Students in Technology Education classes can communicate with other students across New York State. Equipment necessary includes any computer system, modem, and telephone line. Connect fees are extremely low.

Target Audience:

Technology Education teachers and grades 7-12 Technology Education students.

Department Contact Person:

John Fabozzi
New York State Education Department
Room 1619 OCP
Albany, New York 12234
(518) 474-3954

Field Contact Person:

Scope Notes:

Bureau of Occupational Education Program Development

Computer Technology in Occupational Education Curricula

Contact:

Tony Schilling
State Education Department
Room 1615 OCP
Albany, New York 12234

(518) 474-6240

Computer Technology in Occupational Education Curricula

Every occupational education cluster has been impacted, in varying degrees, by technology. The incorporation of computer and computer-related technologies into each junior and senior high school occupational education program area has been based upon the contribution computer usage can make in achieving the overall student objectives of the specific curriculum. Learning about computers, therefore, is not a singular end in itself and implies that computer literacy, per se, is not a function of occupational education programs.

The role of computer programming within the curriculum has diminished significantly in the revision and/or development of occupational education programs and curricula to meet the spirit of the Regents Action Plan and the requirements of the revised Part 100 Commissioner's Regulations. The degree to which students must "program" the computer is limited to enabling competencies, such as employment of Computer Assisted Design programs in drafting or computer-robotics exercises in electronics programs.

In occupational education, computers are used to diagnose and solve problems, to simulate life environments and situations, to control technological processes, and to analyze, manipulate, store and communicate information. These computer technology applications are most evident in curriculum documents in two areas: student performance objectives directly related to specific computer application or operational skills, and as suggested instructional strategies for teachers to follow in developing interactive classroom learning activities. A secondary role for the computer in occupational education is its use in remediation. Computer utilization for remediation is generally characterized by "drill and practice" software typical of many academic program applications. The factor of "equity" is addressed within each curriculum document by ensuring that alternative, non-computer-based strategies are also provided for teachers. A second control for equity exists in occupational education program designs--there are no full programs within the occupational education program continuum where instructional content goals can only be achieved through the use of computers. The sections that follow indicate some areas of application within the major occupational education program clusters.

Extensive applications of computer and computer-related technology are incorporated into the Business/Marketing Education curricula. In various courses students are provided hands-on opportunities to become familiar with computer and computer-related hardware and to develop proficiency in a variety of modern computer software productivity tools used by business. Specifically, the Business/Marketing Education program affords students the opportunity to become knowledgeable in the manipulation of data through the use of software programs for word processing, database management, spreadsheets, graphics, desktop publishing, financial recordkeeping, and accounting. In addition, students in the Business/Marketing Education program acquire an understanding of advanced technological business concepts such as electronic calendaring, project/time management software applications, optical (laser) disk systems, interactive video, electronic information services (videotex), expert systems/artificial intelligence, electronic mail, voice mail, facsimile transmission (FAX), microwave/satellite/fiber optic communication systems, local area networks, wide area networks, audio/video teleconferencing, and electronic blackboards. In summary, the Business/Marketing Education program enables students to develop an understanding of the interrelationships between and among technological hardware, information, software applications, business activities, and business systems.

Agricultural education makes extensive use of applied software to maintain records and analyze problems related to crops, livestock, equipment, and the natural resources to predict impact of weather conditions on farm operations and to solve a variety of problems specific to agricultural pursuits. Teachers and students utilize national agricultural data networks to obtain current market, product, research, and management information for use in the classroom. The entire agriculture curriculum is made available to schools on computer disks and a computerized program planning matrix is also available.

Computer technology plays an important role in a variety of Technical and Occupational Trade programs. Computers are used in the diagnosis and testing of a variety of electronic and digital control applications, in graphic programs for drafting and graphic arts, in problem solving applications, and in computer-based instructional programs. Students in all programs are learning practical computer skills in preparation for a life in an information-oriented society. In addition, many routine clerical and administrative tasks performed by teachers and administrators have been revolutionized through the increased use of productivity software.

Students in Health Occupations Programs become aware of the extensive impact technology has on all aspects of the health care industry. The Health Occupations Education Core curriculum has a module of learning specifically devoted to the use of computers in various phases of health care. Students are also introduced to basic recordkeeping software packages as part of the Core program. Performance objectives related to body functioning, patient care and medication can be achieved through the use of software simulations. The development and maintenance of patient records utilizing the computer is an important segment of both the Medical Assisting and Dental Assisting programs and in content and approach is similar to that of office skills programs within the Business Education cluster.

The study of computer systems is an integral part of the Technology Education programs. Four types of computer applications are stressed: (1) information processing, (2) simulations and modeling, (3) interactive communications, and (4) process control. In the 7th and 8th grade Introduction to Technology program students use applications software (graphics, inventory, data based management, word processing, etc.) in order to attain specific performance objectives within the curriculum. Computer systems are used to provide open-loop and closed-loop control of technological systems. They are used as tools to help decide upon solutions to technological problems and are used in the implementation of a solution to a problem. Production lines are modeled, processes are simulated, and designs are generated. Robots and other devices are controlled through interfaces.

The high school Technology Education program provides additional in-depth study of computers within the four application areas. Through courses devoted to computer-aided design, computer-aided manufacturing, computer graphics and computer applications, students use the computer in its fullest range of capabilities. Courses in digital and communications electronics focus upon the architecture and electronics of computer circuitry.

Home Economics programs, at both the middle and high school levels, use computer technology in a variety of ways. Career resources, vocabulary words, drawings, i.e. Computer Aided Design, nutrition programs are just a few of the areas where a variety of software is being utilized. In addition, teachers use various software programs for classroom management, newsletters, and other types of communication. Computers, or easy access to computers, should be available to all home economic programs to prepare students for today's living.

The inclusion of computer and computer-related technology in each of the occupational education program curriculum documents will continue as each of the program areas is impacted in the real world by such technology. It is through the use of computer and computer-related technology that, for occupational education, many of the broad Regents goals for elementary and secondary education in New York State are most thoroughly and efficiently met.

Office of General and Occupational Education
Division of Occupational Education Instruction
Bureau of Occupational Education Program Development

OCCUPATION EDUCATION SEQUENCE DATABASE

Description of Project Goals/Objectives:

All of the combinations of State-approved occupational education sequences are included in a computerized database. A custom application program permits the structuring of sequences utilizing courses/programs available in the school or area center. The database provides counselors with a flexible system for designing student sequences.

Target Audience:

Secondary level guidance counselors.

Department Contact Person:

Richard Jones, Chief
New York State Education Department
Room 1623 OCP
Albany, New York 12234
(518) 474-4806

Field Contact Person:

Scope Notes:

Computer Equity

Contact:

Karl S. Wittman
State Education Department
Room 481 EBA
Albany, New York 12234

(518) 474-0585

Computer Equity

The issues concerning discrimination, bias and stereotyping in education have been an important part of the American legal and cultural institutions for many years. When the United States Supreme Court decision Brown v. the Board of Education shattered the notion that "separate but equal" was proper, it also began the struggle to ensure access to the mainstream of education for all students regardless of race, color, national origin, sex or handicap.

During the past three decades there have been significant legal and civil actions which removed many of the impediments that institutions and individuals have placed in the way of some to take full advantage of available educational opportunities. More recently, there has been movement away from mere compliance with civil rights laws and towards a more positive and affirmative stance which can be called equity.

Regardless of whether we define the ways in which society and institutions deal fairly with all people in terms of eliminating discrimination or in terms of promoting equity, there still remains the hard work of overcoming artificial barriers which restrict the rights of us all.

During the past few years, many studies have examined the issue of educational equity and technology with a focus on the use of computers. These investigations clearly show that there are significant inequities in the ways in which computers are used and who has access to them based on a student's gender, race, handicap, proficiency in English and on the wealth and geographic location of the school district.

The New York State Education Department is committed to ensuring that computers and all learning technology, its applications, and instruction in its use within education are available to all on an equitable, nondiscriminatory and nonstereotyped basis. The Department supports the need to maintain access to educational services and resources for all State residents, and to undertake a leadership role to assure equity for those population groups who have not fully benefited from these resources.

Improving Computer Equity in the School District

Each school district should carefully examine its institutional policies and practices to improve the distribution to and use of computers by girls and boys, minority and limited English proficient students, and disabled students. District administrators should analyze access patterns of students to computer literacy, computer-assisted instruction and other educational uses of computer technology. Staff should determine if students are being improperly and differentially tracked through instructional uses of the computer. Faculty should examine software for bias, stereotyping and negative values and their own sensitivity to the issues.

The National Center for Computer Equity of the Project on Equal Education Rights has developed some questions district administrators and faculty might consider as the school system prepares its own computer equity policies and practices.

1. Are computers distributed equally among schools? Do low income or minority student populations have fewer computers available to them, and does the district have a plan to correct this imbalance?

2. Are girls, minority students, and students with disabilities participating in voluntary computer classes in numbers roughly proportionate to their numbers in the school or school district? Does the district provide the same level of encouragement to all segments of the student population, or do biases exist which preclude the full participation of certain groups?

3. To what extent is the school district encouraging girls, minority, and disabled students to take part in extra-curricular activities? Do teachers actively encourage traditionally underrepresented students to take advantage of these computer-related activities?

4. Does the school district provide activities for parents and students together? That is, does the school enlist parents' support for equity goals?

5. Are schools aware of bias in software and are they refusing to purchase biased software? Does the school have a review process for race, sex and disability bias?

6. Are teachers, students and others in the district aware of sex, race or disability bias in the software they are using?

7. Is the district ensuring that teacher training includes an effort to sensitize teachers to equity issues in computer use? Is the district offering career counseling and career education that is bias-free?

Some Educational Resources

Organizations

o National Center for Computer Equity. Project on Equal Education Rights. 1413 K Street NW, Washington, D.C 20005.

o Computer Equity Training Project. Women's Action Alliance, Inc. 370 Lexington Avenue, New York, NY 10017.

o Technical Education Research Centers. 1696 Massachusetts Avenue, Cambridge, MA 02138.

o EQUALS in Computer Technology. Lawrence Hall of Science. University of California. Berkeley, CA 94720.

o Center for Special Education Technology Information Exchange.

Council for Exceptional Children. 1920 Association Drive. Reston, VA 22091.

Publications

- The Computing Teacher. (1984, April). Vol. 11, No. 8. This issue is devoted to articles about computer equity, model programs, policy issues and resources.

- Equal Play. (Spring/Fall 1983). Vol. IV, NO. 1 and No. 2. Women's Action Alliance, New York, NY. The magazine is a resource devoted to eliminating bias and stereotyping in education. These two issues deal with computer equity concerns and describe the organization's Computer Equity Training Project.

- Anderson, Ronald E. et al. (1983) "Computer Inequities in Opportunities for Computer Literacy." University of Minnesota, 2122 Riverside Avenue, Minneapolis, MN 55454. This report, based on a study of the National Science Foundation, established that low-income, female and rural students are especially disadvantaged in receiving computer experience in school.

- Campbell, Patricia. "The Computer Revolution: Guess Who's Left Out?." Bulletin, Vol. 15, No. 3. Council on Interracial Books. 1841 Broadway, New York, NY 10023. An organization devoted to producing resources on race, sex and handicap issues.

- Hawkins, Jan. "Computers and Girls: Rethinking the Issues." Technical Report No. 24, Center for Children and Technology. Bank Street College of Education. 610 West 112th Street, New York, NY 10025. Research report of equity issues in the classroom.

- Hertz, Robert and Joseph Jacobs. (1983) Microcomputers in Bilingual and Foreign Language Instruction. National Center for Bilingual Research. Communication/Dissemination Office. 4665 Lampson Avenue, 200 Los Alamitos, CA 90720. This book describes the use of microcomputers to teach English as a second language.

- McWilliams, Peter A. (1984) Personal Computers and the Disabled. Quantum Press, Doubleday & Co., Inc., Garden City, NY. A complete resource guide.

Office of School Improvement and Support
Division of Civil Rights and Intercultural Relations

IMPROVING COMPUTER EQUITY IN THE SCHOOLS

Description of Project Goals/Objectives:

The Division of Civil Rights and Intercultural Relations works with the Bureau of Technology Applications to assist implementation of policies and activities related to educational equity and the use of computers in schools. Technical assistance is provided to Department units and to the field regarding administrative policies, research, classroom application and staff development.

Target Audience:

Teachers, administrators and Department staff

Department Contact Person:
Dr. Karl S. Wittman
New York State Education Department
Occupational Education Civil Rights
Coordinating Unit - Program Manager
Room 481 EBA
Albany, New York 12234
(518) 474-0585

Field Contact Person: None

Scope Notes:

The Office of Elementary and Secondary Education has created a plan for the use of technology in education. One of its major objectives is to ensure that technology and its applications in education are available to all students on an equitable and nondiscriminatory basis. Staff members are encouraged to take special efforts to support the use of technology, including computers, to address the needs of women, minorities, and students who are handicapped, limited English proficient and/or economically disadvantaged.

Office of School Improvement Services

Division of Bilingual Education

Perspective/Recommendations on Computer Usage for Limited English Proficiency Students

Contact:

Laurie Wellman
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Division of Bilingual Education
New York State Education Department
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(518) 474-8775

Gloria Casar
New York City Regional Office
Division of Bilingual Education
New York State Education Department
Two World Trade Center, Suite 2773
New York, NY 10047

(212) 488-7294

Marta Cruz
Long Island Regional Office
Division of Bilingual Education
New York State Education Department
Valentine Road and The Plain Road
Westbury, NY 11590

(516) 997-7010 ext. 281

Perspective/Recommendations on Computer Usage for Limited English Proficient Students

The limited English proficient (LEP) student population in the State of New York numbers more than 128,000 students and, although predominantly Hispanic, this number represents more than 85 language backgrounds. Even the seemingly linguistically homogeneous Hispanic group contains members from South and Central America as well as Europe and the Caribbean area.

The limited English proficient student population is found to a great degree in larger cities within the State; however, because of recent immigration patterns these students also appear in smaller school districts throughout the state.

In summary, there is no one type of "limited English proficient" student in the State of New York but there are many different students throughout the State who come from homes where a language other than English is spoken and who are limited in their ability to speak English. Perhaps the most important fact about these children is that, apart from their temporary inability to speak English, these children bring with them a wealth of experiences and abilities to their school setting.

The New York State Education Department - Division of Bilingual Education firmly believes that limited English proficient students in the State of New York should benefit on an equal basis with English speaking students in the technological advances in the area of computer technology.

It is important in planning programs for limited English proficient students that the goals for programs for limited English proficient students are the same as the goals for English speaking students. School personnel must also assure that the school district plans for computer usage reflect the education of limited English proficient students as an integral part of that plan and not appear as an afterthought to this overall plan.

The application of computer technology to the teaching of LEP students either in English as a second language (ESL) or through the student's native language has been widely reported in the literature and at teacher's conferences and meetings throughout the State and country. Although, traditionally, computers in language classes have been viewed as devices to be used for drill activities in vocabulary, grammatical structures and verb conjugations, the current use and potential for future use in programs for limited English proficient students extends far beyond these somewhat limited applications.

The following general recommendations are offered for the instruction of LEP students. All students regardless of language background should be afforded: 1) equal access to computer hardware, 2) appropriate instruction and instructional software, and, 3) access to occupational training.

I. Access to Computer Hardware. All students regardless of their ability to speak English must have equal access to computer hardware.

II. Appropriate Computer Software and Instruction

1. All cultural groups do not share the same level of computer awareness. School districts must assure that the student's prior experience or lack of experience are taken into account when introducing the student to computers.

2. Software packages which are developed for use in the schools may not be appropriate conceptually or linguistically for the LEP student. Software packages in languages other than English should be utilized. All software including native language software should be evaluated for its appropriateness with LEP students prior to its classroom use.

3. Word processing has been enthusiastically reported as a major breakthrough in helping LEP students to acquire writing and reading skills in English. Students whose alphabet is radically different from that of the English language (e.g. Arabic, Japanese and Chinese) can write more rapidly with a word processor, long before they achieve ability to physically write the new alphabet. In addition, recent research supports the view that reading skills can be taught through the writing process--a departure from the traditional view that ability to read had to precede the teaching of writing.

4. Since communication in English is the primary goal of programs for LEP students, having LEP students work in pairs or teams to do class work, to solve computer puzzles, or to play computer games provides an excellent opportunity for student-to-student communication in a real and meaningful context.

5. Although interactive video is still beyond the fiscal reach of most school districts, the potential for the instruction of LEP students is enormous. Through stop-action video (controlled by the teacher or the student), and accompanying software which elicits student responses as the program progresses, LEP students are learning social skills and vocational skills, in English, by viewing actual scenes and responding to questions based on real contexts.

III. Access to Occupational Training

1. The most practical application of computer technology is training for the LEP students for future employment in a world which is rapidly becoming dependent on computers. School districts should provide opportunities for all LEP students to be introduced to computers in the work situation and advanced instruction for those who demonstrate an interest and willingness to pursue career goals in this area.

COMPENDIUM OF PROMISING TECHNOLOGY PROGRAMS AND PRACTICES IN NEW YORK STATE SCHOOLS--1989

CHILDHOOD SERVICES 40.5

Description of Project Goals/Objectives:

Instructional Program in Content Area

Target Audience:

Students grades 10-12

Department Contact Person:

Field Contact Person:

Marc Heller
Program Supervisor
Orange-Ulster BOCES
Gibson Road
Goshen, NY 10924
(914) 294-5431

Emanuel Axelrod
Dist. Superintendent
Orange-Ulster BOCES
Gibson Road
Goshen, NY 10924

Scope Notes:

a. Hardware: IBM PC's

b. Software: SAT drills, nutritional tutorial

Services/materials (including software) are available from IBM.

Students use computer to do snack and food planning, including cost, recipe selection, figuring food proportions, day-care dollar management, identification of basic food groups, contemporary and children's literature. Pre-schoolers work with high school students in reading readiness program.

COMMERCIAL ART AND DESIGN

Description of Project Goals/Objectives:

Instructional Program in Content Area

Target Audience:

Students in Grades 10-12

Department Contact Person:

Field Contact Person:

Marc Heller
Program Supervisor
Orange-Ulster BOCES
Gibson Road
Goshen, NY 10924
(914) 294-5431

Emanuel Axelrod
Dist. Superintendent
Orange-Ulster BOCES
Gibson Road
Goshen, NY 10924

Scope Notes:

a. Hardware: IBM and Apple microcomputers, printers

b. Software, mouse, graphic tablet, scanner

Students use computers and related software to create and design illustrations, layouts, and related typographical material.

THE COMPUTER AND WRITING: AN INTEGRATED USE OF THE COMPUTER FOR SENIOR ENGLISH

Description of Project Goals/Objectives:

Instructional Program in Content Area

Target Audience:

Students in grade 12

Department Contact Person:

Field Contact Person:

Michael Stegman
English Teacher
Shoreham-Wading River Central School
Route 25A
Shoreham, NY 11786
(516) 929-8500

Richard R. Doremus
Shoreham-Wading River Central School
Route 25A
Shoreham, NY 11786

Scope Notes:

a. Hardware: mini-computer, 63 terminals, printers

b. Software: word processing,

c. Other: Voice synthesizer

A teacher-driven Senior English course using the computer as a writing tool. Assignments reflect language arts strands, assignments teach a particular word processing function naturally, assignments establish an atmosphere for revision that will encourage the consideration of ideas, voice, and audience before mechanics. The computer environment extends the classroom, rather than the classroom being driven by the computer. Classroom management tools exist within the course structure to monitor student progress.

CREATIVE WRITING

Description of Project Goals/Objectives:

Computer Assisted Instruction

Target Audience:

Students in Junior High

Department Contact Person:

Field Contact Person:

Terry Rosengart
P.S. 26
1930 Andrews Avenue
Bronx, NY 10453

Scope Notes:

a. Hardware

b. Software: word processing

Students use word processing to compose creative works. Skills learned include making revisions, proofreading, formatting, editing, printing. Many of the creative works produced in class are published in a school-wide magazine.

COMPUTER LITERACY

Description of Project Goals/Objectives:

Computer Literacy

Target Audience:

Students in Elementary grades

Department Contact Person:

Field Contact Person:

Terry Rosengart
P.S. 26
1930 Andrews Avenue
Bronx, NY 10453

Scope Notes:

A computer literacy program involving students using BASIC to create adventure games, stories, etc. using outlines given them by the teacher as an aid in following BASIC programming language.

READING STARS

Description of Project Goals/Objectives:

Computer Management of Instruction

Target Audience:

Junior High Students

Department Contact Person:

Field Contact Person:

Terry Rosengart
P.S. 26
1930 Andrews Avenue
Bronx, NY 10453

Scope Notes:

a. Hardware: district mini-computer, printer

Sample of Reading Star Certificate, copy of program for running certificate.

Schoolwide program creating an honor roll for Reading Stars. Individual teachers set their own criteria for placement on the honor list which include but are not limited to: outstanding progress, extra assignments, trying hard, and displaying initiative. Student who earns Reading Star receives individual certificate, and class certificates displaying all members of a class who earned a Reading Star are printed.

TELECOMMUNICATIONS

Description of Project Goals/Objectives:

Telecommunications

Target Audience:

Students in junior high

Department Contact Person:

Field Contact Person:

Terry Rosengart
P.S. 26
1930 Andrews Avenue
Bronx, NY 10453
212-220-8372

Scope Notes:

a. Hardware: microcomputer, modem, telephone line.

Services/materials (including software) available: Onitern - Custom design any telecommunication can run on it. Yes, it is available.

Students use telecommunications to district bulletin board to read and leave messages, communicate with "electronic pen pals," and submit poems, stories, and movie reviews to a Student Journal for publication.

THE SHOREHAM-WADING RIVER HIGH SCHOOL COMPUTER PROGRAM

Description of Project Goals/Objectives:

General High School Program - Other

Target Audience:

Students grades 9-12

Department Contact Person:

Field Contact Person:

Frank Bellafiore
Teacher/System Manager
Shoreham-Wading River Central School
Shoreham, NY 11786
(516) 929-8500 ex. 238

Richard R. Doremus
Superintendent
Shoreham-Wading River Central School
Route 25A
Shoreham, NY 11786

Scope Notes:

a. Hardware: mini-computer, 63 terminals, printers

A comprehensive four-year programming sequence beginning with BASIC, Advanced BASIC, FORTRAN and PASCAL, and Advanced Placement Computer Science. The computer terminals are also used in word processing, and as are source for English, social studies, math and science. Integration of Math Twelve with computers, Advanced Placement Social Studies, and the GIS Guidance system increase terminal usage. Telephone lines are available for students to continue their school work at home.

COMPREHENSIVE INSTRUCTIONAL MANAGEMENT SYSTEM (CIMS)

Description of Project Goals/Objectives:

Computer Management of Instruction Guidance

Target Audience:

Teachers grades 1-7
Students grades 1-7

Administrators: Student placement and grouping

Department Contact Person:

Field Contact Person:

Akmtar A. Kahn
Computer Specialist
Brooklyn District 32
797 Bushwick Ave.
Brooklyn, NY 11221
(718) 574-0219

Superintendent Joseph Pacheco
Brooklyn District 32
797 Bushwick Ave.
Brooklyn, NY 11221

Scope Notes:

a. Hardware: mini-computer, terminals, modems

b. Software: CIMS startup package

c. Training/Staff Development: two three hour workshops

An instructional data base management system designed for the scoring of mathematics papers. This system has been expanded to provide for administrative tracking of pupil performance, placement, grouping, order of materials and teacher assignments. Recent expansions and future expansion plans include student records including medical, census, transportation, schedules, grades, attendance, etc. along with district and school budget and accounting functions.

TECHNOLOGY PROGRAMS AND PRACTICES IN THE THREE VILLAGE SCHOOL DISTRICT ELEMENTARY SCHOOL CURRICULUM

Description of Project Goals/Objectives:

Instructional Program in Content Area

Target Audience:

Students in the elementary grades

Department Contact Person:

Field Contact Person:

Dr. Charles Kephart
Computer Curriculum Coordinator
Three Village Central School
Nicoll Road
Setauket, NY 11733
(516) 689-7200 ex. 290

Joseph L. King, Superintendent
Three Village Central School
Nicoll Road
Setauket, NY 11733

Scope Notes:

a. Hardware: Apple 2E computers, printers

b. Software: Bank Street Writer, LOGO

Formal inservice curriculum services/materials (including software) is available.

Integrated computer use in the elementary school developed by a curriculum committee during a summer workshop, including a formal in-service course for teachers. Word processing using Bank Street Writer tied to existing expository writing program. Computers exist in a computer lab setting including a designated "person in charge" in each elementary building.

DISTANCE LEARNING

The current technology explosion is propelling our nation into an information-based society. Communication of this information remains the key to our progress as new electronic highways increase both the speed and the amount of data that can be transmitted by a given medium. Telecommunications--the communication between two or more persons or groups via an electronic medium--is being used for a wide variety of reasons in American business and industry. From aiding law enforcement officials to developing tele-medicine, the applications of telecommunications seem boundless.

In education, too, telecommunications hold great promise, particularly through the application of distance learning. This innovative approach to instruction, where the learner is distant from either the instructor or the instructional materials, is unique in that the system is designed to be interactive. Both the instructor and students, no matter where they are receiving the instruction, are able to communicate directly with each other.

Distance learning applications are being developed to help meet the goals of excellence, higher productivity, and equality of access in our educational and cultural institutions. As educational requirements increase, and as both enrollments and available teachers continue to decrease, schools need new educational resources. Distance learning has been developed to help meet these needs and goals, and to address many questions, such as:

How will school districts meet the mandated increased course requirements?

How do we provide adequate enrichment for the gifted and talented?

How do we strengthen existing or emerging staff development/inservice training for teachers and other staff?

Can we adequately address the unique needs of the continuing adult learner and the homebound student?

How do we reach out beyond the school to the community to create stronger alignments and more efficient communication?

The technological revolution is bringing a more effective educational program within the reach of more people. A brief look at some of the emerging media which are contributing to the growth of distance learning--all of which are capable of two-way transmission and interactivity--is instructive.

CABLE TELEVISION: Cable technology allows for the transmission of audio and video signals from one point to another, or many points, via a cable. In cooperation with existing cable television companies, a school district can have access to specific cable channels reserved by the Federal Communications Commission for educational and community purposes.

MICROWAVE: Microwave is a broadcast medium which can carry television programming and thousands of voice channels without the use of a cable. Each tower in a microwave relay system picks up the signal, amplifies it, and retransmits it to the next tower in line with the destination point.

SATELLITE: Satellites receive microwave signals from earth at a given frequency (uplink) and transmit them back to earth at a different frequency (downlink). Audio, video and digital information can be relayed by satellite signals and picked up on earth by "dishes."

INSTRUCTIONAL TELEVISION FIXED SERVICE (ITFS): ITFS uses low powered microwave equipment to transmit audio, video and data information. It is effectively a closed-circuit system and is not intended for public reception.

LOW POWERED TELEVISION (LPTV): LPTV stations are miniature television stations that transmit signals directly to TV sets in the same full service stations broadcast. They serve a small and usually rural geographic area that is not served by urban stations.

DATA TRANSMISSION: Using ordinary telephone lines, computer terminals are able to network with one another using a device called a modem. This interface device transforms computer-usable data into a form that can be transmitted from the sending site to the receiving site through ordinary phone lines.

A district interested in initiating a distance learning telecommunications project should set up a planning committee to oversee all plans and processes associated with the project. Ideally, this committee would consist of teachers, parents, industry contacts, school administrators and the technical staff who would eventually manage the project. Some essential seed money will be necessary for the planning committee to carry out its study of the feasibility of a distance learning network for the area resources available to provide this initial funding include legislative and private industry grants, co-ser grants and local funding.

During the course of planning, a number of inter-related steps are essential for effective planning and implementation. Initially, it is very important for all committee members to have a clear understanding of the tasks they must undertake and the problems that must be solved. Statements of goals and objectives, as well as a needs analysis, are excellent vehicles for creating a solid foundation from which to begin. Secondly, it is important to accurately analyze the technology systems available, beginning with an assessment of the capabilities that may already exist in one's school district. After considering important facets of your analysis--such as implementation and operation costs, funding sources and engineering studies--the system which best meets the above-mentioned needs may be selected.

Following this careful study and planning comes the implementation part of your plan. Here your planning committee is transformed into a planning committee to continually plan, staff and monitor various tasks. These subcommittees will be of a technical and fiscal nature, as well as addressing the tasks of staffing and curriculum considerations.

Evaluation is presently mentioned, not as a final step, but more so as a continuing function or process throughout the project. An ongoing assessment of the planning functions, delivery systems and results will not only increase the efficiency of the project, but will serve others who are either beginning their own distance learning projects or who are trying to improve the quality of current telecommunications systems.

Distance learning--the use of telecommunications for education--shows real promise. Continued support, more research and a broader base of knowledge must be developed so that responsible decisions can be made. It is more than need or the obvious benefits of this growing technology that spur us on. It is, rather, man's ongoing inclination to reach beyond reality and strive for the possible.

DISTANCE LEARNING PROJECTS IN NEW YORK STATE

NEW YORK STATE TECHNOLOGY NETWORK TIES DISTANCE LEARNING IMPLEMENTATION AND PLANNING PROJECTS

Since 1985, a variety of distance learning projects have been undertaken by BOCES and school districts throughout the State. Most projects involve needs and technical feasibility studies. A few projects have actually designed, developed, and implemented distance learning programs for instruction or staff development.

The operating projects typically utilize communications technologies to link a teacher or professional in one school or site to students or other professionals in other schools or sites several hundreds of miles away. The networks provide for some level of interaction amongst persons at these sites, typically in the form of two way audio and/or data communications and one-way video transmission. Courses, such as calculus, astronomy, and second language instruction have been offered. Distance learning has also been used to provide staff development experiences for teachers and administrators.

The Technology Network Ties/Distance Learning Grant Program provided grant awards to BOCES and school districts in 1986-87 and 1987-88 for planning, implementation, and expansion projects. A second, related Department program, the Efficiency Study Grant Program, has provided grants up to a maximum of $20,000 to school districts to support a range of planning activities. Since 1985-86, approximately 75 Efficiency Study Grants have been awarded to support school district efforts to plan for distance learning. Approximately $400,000 has been awarded to support these studies.

The Regents specifically urged the Department to "expand the application of distance learning technology to address more equitable access to elementary, secondary, adult basic and professional education" in their program priorities for 1988-89. The Regents have also proposed new legislation to seek funding to establish a Statewide Distance Learning Grant Program.

The following profiles of the 1986-87 and 1987-88 Distance Learning implementation and planning projects funded under Technology Network Ties provide information on objectives, needs addressed, technology employed, and evaluation results.

NEW YORK STATE
DISTANCE LEARNING IMPLEMENTATION
PROJECTS — 1986-87 AND 1987-88

DISTANCE LEARNING PROJECT IN WESTERN NEW YORK

I. PROJECT DATA:

A. Title: Distance Learning Project in Western New York

B. Primary Institution:

1. ERIE 1 BOCES
   2 Pleasant Avenue West
   Lancaster, New York 14086
   (716) 686-2000

   Contact Person(s):

   Gary C. Johnsen
   Director, Information Services
   (716) 686-2088

   Dr. Robert Loretan
   District Superintendent

   Dr. Martin Belscher
   Director, Information Services

C. Participating Institutions:

1. Buffalo City Schools
   712 City Hall
   Buffalo, New York 14202
   (716) 842-3161

   Contact Person(s):

   Eugene T. Reville
   Superintendent
   (716) 842-3161

   Dave Lanz
   Supervisor

2. Cleveland Hill Union Free School District
   Mapleview Drive
   Cheektowaga, New York 14225
   (716) 836-7200

   Contact Person(s):

   Ken Dyl
   Superintendent
   (716) 836-7200

Pat Connors
Assistant Superintendent

3. Yorkshire-Pioneer Central School
Box 579 - City Line Road
Yorkshire, New York 14173
(716) 492-4603

Contact Person(s):

Henry Heslop
Superintendent
(716) 492-4603

4. West Valley Central School
School Street
West Valley, New York 14171
(716) 942-3293

Contact Person(s):

Benjamin Randle
Superintendent
(716) 942-3293

5. Cattaraugus-Allegany BOCES
Carter Street
Cattaraugus, New York 14719
(716) 257-3483

Contact Person(s):

Frederick Thomsen, Superintendent
(716) 257-3483

Marilyn Gates
Supervisor, Instructional Services

6. Rushford Central School
9114 School Street
Rushford, New York 14777
(716) 437-2217

Contact Person(s):

John Edwards
Superintendent
(716) 437-2217

7. Houghton College

Contact Person(s):

Willis Beardsley
Registrar

II. GOAL AND OBJECTIVES:

A. Goal:

1. To develop, use, and explore current and emerging distance learning technologies to provide appropriate learning situations which will broaden and enhance educational opportunities for students and teachers.

B. Technological Objectives:

1. To develop a cost effective distance learning model linking urban, suburban, and rural school districts in Western New York using current technology.

2. To assess and incorporate appropriate technologies to develop innovative course materials and electronic, instructional resources to enhance distance learning for the purpose of improving instruction.

C. Instructional Objectives:

1. To develop and apply appropriate criteria for the selection of courses, skills, modules of instruction, and a variety of other learning experiences which can be delivered through distance learning.

2. To develop and apply appropriate criteria for the selection of distance learning students and teachers.

3. To develop a training program for teachers and students in the use of distance learning technology.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. All school and teacher sites will be equipped with OPtel telewriter II-pc's using IBM pc/XT's and plantronic phone beam speaker phones with wireless remote microphones. The package includes a graphics tablet, software, and a voice-to-modem, which transmits voice and data simultaneously on one standard, dial-up telephone line. All terminal stations will be connected using conference calls through NYNEX.

B. The Houghton system includes Meridian SL-1 digital switching equipment which could connect 5 sites at once utilizing the Optel/IBM Equipment. There will be access to the Houghton College teleconferencing facility and/or the ATT alliance bridge or comparable systems.

C. It is anticipated that a microwave-based networking system will be put into place during the first year of the project, in order to reduce the costs of teleconferencing.

D. Video transmission systems will be investigated in order to add real-time video transmission systems into the instructional plan.

IV. NEEDS:

A. Distance Learning will provide rural schools with access to AP, specialized and/or enrichment courses which they are presently unable to provide because of:

- geographic isolation
- declining financial resources
- limited teaching resources
- limited enrollment

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. AP Calculus will be offered.

2. The project will eventually extend to other courses which currently are or will be lost due to declining enrollments, diminishing resources and other factors.

B. Programs:

1. A training program will be provided to students and teachers on the use of Distance Learning technology.

2. A summer workshop will be offered at Houghton College involving key personnel teams from schools and colleges in New York State which are currently involved in Distance Learning projects.

VI. NATURE OF PROGRAMMING:

A. The "instructor" will initiate the call and instruct each location to put their system on-line. Once on-line, all participants have the ability to interact audibly and visually. Each location can view the screen and can access it via the graphics tablet. Participants can use the "pen" to write on the tablet. This is then transmitted instantly to all other sites.

B. During the first year of the project, a Houghton College instructor will teach the AP calculus course using some of the methods and materials developed in the Delaware-Chenango project.

VII. START AND END TIME FRAME:

A. September 1986 - May 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning - Implementation Project:
Award: $72,000

B. Technology Network Ties - 1987-88
Expansion Grant
Award: $35,000

IX. EVALUATION COMPONENT:

A. The project coordinator will design questionnaires to compare and assess attitudes, and scores on the AP exam, between the AP calculus class given via distance learning from Houghton College and a traditional, control AP calculus course.

B. During the summer workshop, participants will record their personal responses to various course delivery systems, and the needs of their communities. Written and video presentations of the summer findings will be prepared and disseminated throughout New York State during the 1987-88 school year.

C. Existing literature, on-site observations, interviews with students and teachers, and questionnaires will be used to collect information for the design of a comparative study to analyze conventional and distance learning environments. The study will continue during the second year of the project.

COMPUTER CONFERENCING FOR HIGH SCHOOL COURSES

I. PROJECT DATA:

A. Title: Computer Conferencing for High School Courses

B. Primary Institution:

1. Islip Union Free School District 2
   215 Main Street
   Islip, New York 11751
   (516) 581-2560

Contact person(s):

1. Dr. Gerard Coates, Project Coordinator
   (516) 581-2560

2. Robert D'Ambrosio
   Director of Computer Development

3. Dr. Ray V. Kwak, Superintendent

C. Participating Institution:

1. New York Institute of Technology
   Old Westbury Campus
   P.O. Box 170
   Old Westbury, New York 11568

Contact Person(s):

Charles Robert Kirst
Coordinator of Computers in Education
Program
Angela J. Richards
Director, Academic Studies

II. GOAL AND OBJECTIVES:

A. Goal:

1. To prepare a replicable, distance learning model based on computer conferencing which will allow high school students throughout New York State to take courses that are unavailable to them in their home districts.

B. Objectives:

1. To develop a curriculum for high school statistics, which can also be used for college credit. It will integrate the following:

- graphics tool kit
- CAI supportive materials
- set of computer simulations
- statistical package
- communications package
- word processing
- text book
- course outline
- selected readings

2. To develop a syllabus for high school statistics, based on the curriculum.

3. To prepare manuals for teachers and students.

4. To train a high school math teacher to use computer conferencing system to teach the syllabus.

5. To design an implementation plan for Fall, 1987

6. To conduct in-service teachers' seminars.

7. To conduct a survey of needs.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Computer conferencing will link personal computers to the New York Institute of Technology host computer facility via normal direct dial telephone connections or by connecting to GTE Telenet.

IV. NEEDS:

A. In light of the stricter requirements of the Regents Action Plan, schools are required to offer much-needed, upper-level courses previously not available because of:

- low course enrollment
- remoteness of schools
- schedule conflicts
- inadequate supply of qualified instructors

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. A statistics class which can be used for college credit.

2. The course will serve as a prototype that can be used

for other high school subjects.

B. Programs:

1. In-service teachers' seminars will be given in order to teach teachers how to use the computer conferencing system.

VI. NATURE OF PROGRAMMING:

A. Computers will serve as the sole means of communication and will join individual students in one location, to students in another. Students are able to "converse" among themselves and with the teacher via messages entered in the course conference.

B. The proposed delivery model will integrate print material, computer conferencing, computer aided learning packages, simulations and computer software took kit, which will be used at the learning site by the student.

VII. START AND END TIME FRAME:

A. October 1, 1986 - June 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87,
Interactive Distance Learning - Implementation Project.

Award: $63,000

IX. EVALUATION COMPONENT:

A. Validation of the curriculum will be done by a panel of experts who will review the course outline, syllabus, materials, and planned student activities.

B. A field test of the three major technological components of the model course will be carried out involving one group of ten students from low-income, minority backgrounds and another group from upper-middle class, white backgrounds. Evaluation data will consist of:

- analysis of video-taped segments of selected interactions;
- an analysis of transcripts of the computer conference;
- on-site observations; and
- student interviews.

INTERACTIVE INSTRUCTIONAL PROJECT

I. PROJECT DATA:

A. Title: Interactive Instructional Project

B. Primary Institution:

1. Rensselaer-Columbia-Greene BOCES
   1550 Schuurman Road
   Castleton, New York 12033
   (518) 477-8771

   Contact Person(s):

   Ron J. Kovac, Director of Technology
   (518) 477-8771

   Wayne Gearing, Project Coordinator
   (518) 477-8771

C. Participating Institutions:

1. Berlin Central School District
   Berlin, New York 12022
   (518) 658-2515

   Contact Person(s):

   Superintendent of Schools
   (518) 658-2515

2. Chatham Central School District
   Chatham, New York 12037

   Contact Person(s):

   Superintendent of Schools
   (518) 392-2400

3. Coxsackie-Athens Central School District
   Coxsackie, New York 12051

   Contact Person(s):

   Seraphino C. Delucia
   Superintendent of Schools
   (518) 731-6155

4. Ichabod Crane Central School District
   Valatie, New York 12184
   (518) 758-7575

Contact Person(s):

Superintendent of Schools
(518) 758-7575

5. Schodack Central School District
Castleton, New York 12033

Contact Person(s):

James R. Butterworth
Superintendent of Schools
(518) 732-2297

6. Hudson Valley Community College
80 Vandenburgh Avenue
Troy, New York 12180
(518) 283-1100

Contact Person(s):

Lawrence Berk, Director
Learning Resources Center

7. Columbia Greene Community College
Box 1000
Hudson N.Y. 12513

Contact Person(s):

Dr. Lynn Sudan
(518) 828-4181

II. GOAL AND OBJECTIVES:

A. Goal:

1. To formulate a coalition of the public educational institutions, the private sector, higher education institutions and other service agencies.

2. To provide for a communications forum in which comprehensive and efficient solutions can be proposed in compliance with the needs for the system.

3. To utilize the communication system currently being implemented to address educational needs in the form of quality programs for students.

B. Objectives:

1. The current Rensselaer-Columbia-Greene BOCES microwave

communication system will be enhanced to function as an interactive instructional system using an interactive voice and Personal Computer (PC) based graphics system.

2. Students participating in the distance learning project will demonstrate acceptable performance based upon criteria to be established.

3. An array of programs will be developed in the area of foreign languages which are either currently unavailable or offered at a prohibitive cost.

4. Courses developed by the distance learning project will address the range and scope of the Regents Action Plan, the specific needs as identified by local districts, and will be cost-effective.

5. Show participating and non-participating districts the potential of this technology through on-site demonstrations of other successful distance learning projects.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. The existing network consists of a combination of point-to-point analog microwave sites and 4-wire dedicated telephone lines. Each leg of the network is a voice grade circuit or circuit capable of data transmission rates of up to 9,600 BAUD.

B. Each site would use an MS/DOS compatible computer with 640 KB RAM and 20 MB fixed disk drive (IBM PC/AT or compatible); graphics tablet; audio equipment and a modem to interface with the network.

IV. NEEDS:

A. As a result of declining enrollment and shortage of teachers, the scope of course offerings available to students is extremely limited. A distance learning project is needed to provide the district with appropriate, higher quality courses as mandated by the Regents Action Plan, and to increase their accessibility to the wealth of resources available within the private sector, colleges and universities, and amongst each other.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. Courses will be developed in relation to the thrusts identified in the Regents Action Plan and will be based on a needs assessment of the participating districts.

2. Courses identified thus far will be in the foreign languages and the hard sciences.

B. Programs:

1. Results of the project will be disseminated, along with the results of other pilot projects in distance learning, to serve as an information base for further exploration of the future of this technology.

2. Awareness sessions will be conducted.

VI. NATURE OF PROGRAMMING:

A. Students and instructors simultaneously interact using an interactive voice and PC based graphics system with peripheral hard copy.

VII. START AND END TIME FRAME:

A. October, 1986 - ongoing

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning - Implementation Project
Award: $46,000.

IX. EVALUATION COMPONENT:

A. The evaluation design will address the following components:

1. System effectiveness - the appropriateness and effectiveness of the hardware will be monitored during the field test.

2. Student impact - each course will include performance objectives and evaluation criteria. Results will be assessed for every course.

3. Course quality - each course will be submitted to the State Education Department. This review data will be coupled with the second semester field test results (students' performance results and a formal survey).

4. Project effectiveness - overall impact of the project will be determined by combining information gathered in the components above with the results of a survey of all participants.

5. Cost effectiveness - a study will be conducted to determine relative cost of the interactive system compared to the delivery of equivalent programs using

traditional methods.

INTERACTIVE TELECOMMUNICATIONS NETWORK

I. PROJECT DATA:

A. Title: Interactive Telecommunications Network

B. Primary Institution:

1. St. Lawrence-Lewis BOCES
P.O. Box 231
Outer State Street
Canton, NY 13617

Contact Person(s):

Elizabeth Durocher
Division of Instructional Support Services
Northeast Campus
P.O. Box 310
Norwood, New York 13668
(315) 353-6684

C. Participating Institutions:

1. Edwards-Knox Central School
Russell, N.Y. 13684

Contact Person(s):

Mr. Peter Hodge
Superintendent of Schools
(315) 347-2195

2. Harrisville Central School
P.O. Box 189
Harrisville, NY 13648

Contact Person(s):

Mr. William Cartwright
Superintendent of Schools
(315) 543-2592

3. Gouverneur Central School
133 East Barney Street
Gouverneur, NY 13642

Contact Person(s):

Bonnie F. Bettinger
Superintendent of Schools
(315) 287-1900

II. GOAL:

1. To link via Instructional Television Fixed Services (ITES), which in this instance is a closed-circuit television system, the participating schools and BOCES for direct instruction and administrative services. The network system will provide Advanced Placement courses to students in schools in which there is a limited enrollment problem.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. ITFS, two-way audio and two-way video microwave transmission to all four sites. Any site can be the teaching station or a classroom-receive station. In each site are cameras, multiple monitors, and microphones. The network is designed for one hundred percent interaction, which means that any site can communicate with any other site and all other sites.

IV. CURRICULUM/PROGRAM AREAS ADDRESSED IN THE PROJECT:

A. Courses offered commencing 9/4/85:

Period 1 - 8:24-9:09 - Health-second semester from Edwards
Period 2 - 9:12-9:57 - Shorthand-from Gouverneur
Period 3 - 10:00-10:45 - Psychology-first semester from Edwards
Sociology-second semester from Edwards
Period 4 - 10:48-11:33 - Latin II-from Harrisville
Period 5 - 12:09-12:54 - AP English-from Gouverneur
Period 6 - 12:57-1:42 - English II Non-Regents-from Edwards
Period 7 - 1:45-2:30 - Business Law-from Harrisville

V. NATURE OF PROGRAMMING:

A. A teacher interacting with students within the live studio classroom and with students in other remote-reception classrooms.

VI. START AND END TIME FRAME:

A. May 1983 - Present
(Instruction via the system began 9/4/85. Completing 2nd year of operation between Gouverneur, Harrisville, and Edwards-Knox in 10/86. Clifton-Fine will be completed in 1986. The goal is to complete a feasibility study for the

remaining 15 schools so all 19 schools will initiate implementation next year.)

VII. FUNDING SOURCE(S):

A. Direct Legislative Grant for 1984 - $500,000.

B. CO-SER direct aid covers operational cost.

C. $30,000 legislative grant for feasibility study.

D. Technology Network Ties - 1987-88.
Expansion Grant -
Award - $35,000.

VIII. EVALUATION COMPONENT:

A. There is a continuous external evaluation conducted by Cornell University.

B. A final report on objectives accomplished for the 1987-88 year included:

- An engineering firm was retained as technical consultant.
- Technical plan developed to coordinate the tower move from Edwards school building to a new facility.
- Technical consultant recommended a 23 gigahertz, point to point microwave for inclusion in the southern IT cluster.
- Programming plans were developed.
- SUNY Canton was approached to provide enrichment courses.

TELECOMMUNICATIONS IN SMALL RURAL SCHOOLS

I. PROJECT DATA:

A. Title: Telecommunications In Small Rural Schools

B. Primary Institution:

1. Delaware-Chenango BOCES
Instructional Support Services
2 N. Mitchell Street
Norwich, New York 13815

Contact Person(s):

Edmund B. Gomes
Director
(607) 336-6514

C. Participating Institutions:

1. Afton Central School
Afton, New York 13730

Contact Person(s):

John Oates
Superintendent
(607) 639-1111

2. Bainbridge-Guilford Central School
18 Juliand Street
Bainbridge, New York 13733-1097

Contact Person(s):

Richard Carroll
Superintendent
(607) 967-2421

3. Delaware Academy and Central School
Delhi, New York 13753

Contact Person(s):

Richard Zajack
Superintendent
(607) 746-2101

4. Downsville Central School
Downsville, New York 13755

Contact Person(s):

Weston Hyde
Superintendent
(607) 363-7505

5. Hancock Central School
Hancock, New York 13783

Contact Person(s):

Robert Urzillo
Superintendent
(607) 637-2511

6. Mount Upton Central School
Mount Upton, New York 13809

Contact Person(s):

Michael Klockowski
Superintendent
(607) 764-8201

7. New Berlin Central School
New Berlin, New York 13411

Contact Person(s):

C. Thomas Bailey
Superintendent
(607) 847-6551

8. Otselic Valley Central School
P.O. Box 161
South Otselic, New York 13155-0161

Contact Person(s):

Thomas Helmer
Superintendent
(315) 653-7218

9. Oxford Academy and Central School
Oxford, New York 13830

Contact Person(s):

Tony Micha
Superintendent
(607) 843-2025

10. Sherburne-Earlville Central School
Sherburne, New York 13460

Contact Person(s):

Joseph Martinelli
Superintendent
(607) 674-2141

11. Sidney Central School
95 West Main Street
Sidney, New York 13838

Contact Person(s):

Dr. Perry Berkowitz
Superintendent
(607) 563-2135

12. Walton Central School
Walton, New York 13856

Contact Person(s):

George Mack
Superintendent
(607) 865-4116

II. GOAL AND OBJECTIVES:

A. Goal:

1. To add to the existing curriculum courses that are required by the Regents Action Plan.

2. To expand classroom experience by allowing students to converse via telephone with persons and groups they might not otherwise meet.

3. To allow teachers in different school districts to meet for professional development.

B. Objectives:

1. To offer two electronic courses in the 1988-89 school year in which students who participate will achieve a grade of 75% or better and of those taking the AP exam more than 60% will score above the 30th percentile.

2. At least two classes in grades K-4, 5-7, and 8-12 in each of the 18 component school districts will take electronic field trips during 1988-89. (Electronic field trips are telephone conversations with a person or group with whom a class wishes to speak).

3. At least half the schools will use the teleconferencing

equipment for staff in-service development.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Telelearning classes use:

1. IBM PC/XT(TM) microcomputers
2. Optel Voice-Too (TM) modem
   Telewriter II PC(TM) conferencing software
   Percept(TM) Penpad with Pendraw(TM)
3. TSI(TM) or Plantronics(TM) speaker phones
4. Hard disk drive for teachers
5. Facsimile machines
6. "Electronic Slate" computer bulletin board
7. Multilink Inc. MicroLinx(TM) teleconferencing bridge
8. Microsoft Works(TM) word processing, database, spreadsheet, communications software
9. Computereyes(TM) video digitizer by Digital Vision

B. Electronic field trips use:

1. Large group speaker phones that include two transmitter microphones, a control unit and speaker(s)s.

IV. NEEDS:

A. Some schools may lack capable faculty or faculty who have the time to teach special courses required by the Regents Action Plan.

B. Students in isolated rural school districts lack opportunities to meet people with ideas and backgrounds different from their own.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. AP Calculus
2. AP English

B. Electronic Field Trips-subjects determined by teacher's request.

VI. NATURE OF PROGRAMMING:

A. Teachers in calculus and English classes teach students on-line several times a week, and also offer additional office hours either on-line or via conference call.

VII. START AND END TIME FRAME:

A. Coincides with school calendars.

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1987-88
Expansion Grant
Award: $25,000

IX. EVALUATION COMPONENT:

A. End-of-year grades and advanced placement scores will be used to evaluate success of telelearning classes. Informal evaluation by teachers, aides, and students will be used to evaluate equipment and procedures throughout the year.

B. Electronic field trips will be evaluated quantitatively by the number of classes which participate and their distribution throughout the Delaware-Chenango BOCES. Records will be kept of activities undertaken and educational goals targeted for each electronic field trip. Qualitative evaluation will be conducted on each trip though informal evaluation with teachers and students.

TELECOM5 EDUCATIONAL NETWORK

I. PROJECT DATA:

A. Title: TELECOM5 Educational Network

B. Primary Institution:

1. Broome-Delaware-Tioga BOCES
   421 Upper Glenwood Road
   Binghamton, NY 13905-1699
   (607) 729-9301

   Contact Person(s):

   Mr. James E. Moody, Asst. Supt. for Mgt. & Comp. Svcs.
   (607) 729-9301 extension 333

C. Participating Institutions:

1. Delaware-Chenango BOCES
   RD #3, East River Rd.
   Norwich, NY 13815
   (607) 334-2771

   Contact Person(s):

   Dr. Freeman VanWickler
   Superintendent

2. Ostego-Northern Catskills BOCES
   Rexmere Park
   Stamford, NY 12167
   (607) 652-7531

   Contact Person(s):

   Mr. Austin Leahy
   Superintendent

3. Schuyler-Chemung BOCES
   431 Philo Road
   Elmira, NY 14903
   (607) 739-3581

   Contact Person(s):

   Mr. Ronald Poletto
   Superintendent

4. Steuben-Allegany BOCES
   RD #1
   Bath, NY 14810

(607) 776-7631

Contact Person(s):

Mr. Rene Bouchard
Superintendent

II. GOAL AND OBJECTIVES:

A. Goal:

1. To establish a regional network interconnecting the five BOCES and WSKG to allow for regional distance learning and staff development programs, to reduce costs and improve the quality of data communications, to reduce voice phone costs where possible, and to serve as a regional feeder system to interconnect with the entire statewide TNT network.

B. Objectives:

1. To establish a project steering committee to plan activities.

2. To provide the five BOCES and WSKG with statewide electronic mail via TNT.

3. To employ an outside consultant to complete a study and provide a report for the network.

4. To involve multi-BOCES participation in offering a regional distance learning program.

5. To pilot test a distance learning program via WSKG, including two-way audio.

6. To offer at least two regional staff development programs via WSKG, including two-way audio.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Possibilities include the utilization of the combined resources and talents of the 5 BOCES in the region, plus existing tower facilities and communication capacities offer significant opportunities to meet these needs. A consultant's report will recommend the technologies to be employed and will focus on developing partnerships with local utilities and companies.

IV. NEEDS:

A. In school districts with enrollments below 1200 students will have difficulty meeting the requirements of the Regents Action Plan. Since this includes 63% of the school districts in the State, a coordinated telecommunications system allowing for all types of interactive instruction is an absolute necessity.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Programs of general interest to schools within the region, including "Teen Stress" for students, "Sports Medicine" for coaches and "Implementing Effective Schools".

VI. NATURE OF PROGRAMMING:

A. Utilizing existing facilities at the local PBS station, WSKG, regional programs will be offered such that anyone in the region can participate. Programs in the area of sports medicine, teen stress and effective schools will be presented.

VII. START AND END TIME FRAME:

A. March 1988-June 1988

VIII. FUNDING SOURCES:

A. Technology Network Ties -- 1987 - 1988
Interactive Instruction/Instructional Network/ Distance Learning
Implementation Grant
Award: $72.262

IX. EVALUATION COMPONENT:

A. To evaluate on the basis of the completion of the six objectives previously stated.

B. A report has been submitted to the State Education Department giving specific outcomes of the objectives.

C. A final report on objectives accomplished for 1987-88 included:

- Evaluation results were provided for "Time Out for Treatment", "Time Out for Training", "Recognizing Stress", and "Coping". Overall results of each teleconference are positive.

- The future budget required is $31,477. The project conducted a distance learning program for Fall '88 via WSKG on "Teen Stress."
- A complete package, including videotape, for "Teen Stress" was provided.

VITAL (VIDEO INTERACTIVE TEACHING AND LEARNING)

I. PROJECT DATA:

A. Title: VITAL (Video Interactive Teaching and Learning)

B. Primary Institution:

1. Gloversville Enlarged School District
90 North Main Street
Gloversville, New York 12078

Contact Person(s):

Mr. David A. Burpee
Assistant Superintendent for Curriculum
(518) 725-5817

Mr. George R. Krahl
Superintendent

C. Participating Institutions:

1. Amsterdam City School District
Amsterdam, New York 12010

Contact Person(s):

Mr. Alan Brown
Superintendent
(518) 843-3180

2. Broadalbin/Perth Central School
Broadalbin, New York 12025

Contact Person(s):

Mr. Richard J. Sagar
Superintendent
(518) 883-3442

3. Fulton-Montgomery Community College
Johnstown, New York 12095

Contact Person(s):

John Bosshart
President
(518) 762-4651

4. Greater Johnstown School District
501 Glebe Street

Johnstown, NY 12095

Contact Person(s):

Mr. John McNamara
Superintendent
(518) 762-4611

5. Mayfield Central School
Mayfield, NY 12117

Contact Person(s):

William Gokey
Superintendent
(518) 661-5431

6. Northville Central School
Northville, New York 12134

Contact Person(s):

Gerald P. Fitzgerald
Superintendent
(518) 863-4332

II. GOAL AND OBJECTIVES:

A. Goal:

1. To provide courses via distance learning that students would not otherwise be able to take.

B. Objectives:

1. To provide equitable educational opportunity to BOCES component rural school districts via a one-way video and two-way audio telecommunication network system where distance is a significant factor.

2. To provide courses that meet the objectives of the Regents Action Plan.

3. To meet the identified needs of participating schools by providing advanced and college credit courses to students who otherwise lose the opportunity to participate because of limited enrollment, distance, scheduling conflicts, inability to employ certified teachers, limited funds, transportation problems, homebound student requirements and requests for adult education courses.

C. Performance Objectives:

1. Students will successfully complete all course requirements as evidenced by final grades/teacher and/or counselor reports.

2. Student/teacher responses to the media and course presentation will be ascertained via a survey instrument to be developed.

3. An overall evaluation of the project will be conducted by the original planning committee after June 30, 1987.

4. All survey and evaluation data will be utilized in any modification and/or extension of Project VITAL in subsequent years.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. A one-way video/two-way audio telecommunications network utilizing CATV cable and microwave transmission. Audio teleconferencing is accomplished through telephone line technology. A television studio at Gloversville School District and a television studio at Fulton Montgomery Community College will be utilized for broadcasting.

IV. NEEDS:

A. Each of the schools involved in the project described its needs in terms of courses, anticipated numbers of homebound students requiring home instruction, and continuing education courses.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. K-6 Health Education

B. Programs:

1. GED - Adult High School Equivalence Course

VI. NATURE OF PROGRAMMING:

A. Broadcasts will originate from the Gloversville TV studio and the Fulton Montgomery Community College TV Studio using broadcasting/TV telecommunications equipment. These will be 100% audio interaction with all sites; two-way audio, one-way video, using multi-link teleconferencing for audio interaction and a combination of CATV cable and microwave technology for video transmission.

VII. START AND END TIME FRAME:

A. Beginning date upon approval - June 30, 1987

VIII. FUNDING SOURCES

A. Technology Network Ties--1987-1988
Implementation Grant
Award: $75,000

B. A survey questionnaire will provide opinions both pro and con relative to quality of presentation, sound and graphics and format.

C. A final report on objectives accomplished for 1987-88 included:

- The project is developing a comprehensive health education program coupled with an interactive telecommunications teaching and learning system to serve a consortium of rural schools.
- The planned sequential curriculum, based upon research in content and effective teaching strategies, addresses eleven concept areas and includes teacher materials, a teacher training package, and video components. There are pre- and post- tests and attitude assessment instruments.
- The project is preparing estimated costs.

TELE-TEACHING FOR THE HOMEBOUND

I. PROJECT DATA:

A. Title: Tele-Teaching for the Homebound

B. Primary Institution:

1. Community School District #24
   67-54 80th Street
   Middle Village, NY 11379

   Contact Person(s):

   Dr. Jeanne Pizzo
   (718) 326-8231

   Mr. John E. Iorio
   Superintendent

C. Participating Institutions:

1. Community School District #24
   67-54 80th Street
   Middle Village, NY 11379

   Contact Person(s):

   Mr. John E. Iorio
   Superintendent
   (718) 326-8241

2. Community School District #33
   110 Livingston Street
   Brooklyn, NY 11201

   Contact Person(s):

   Dr. Charles Schonhaut
   Superintendent
   (718) 935-2790

II. OBJECTIVES:

A. Objectives:

1. To triple the number of hours of instruction received by each homebound student, and, thus, improve opportunities for academic achievement.

2. To improve conditions by:

a) permitting homebound children to interact intellectually with their peers;

b) providing instruction to homebound children during periods when their mental alertness is at its peak; and,

c) reducing stressful adjustments which usually accompany the transition from the school setting to home instruction.

3. To increase opportunities for socialization for physically challenged students who are isolated from their peers.

4. To improve articulation between the classroom teacher and the home instructor.

5. To permit teachers and students to share their experiences with colleagues and peers in other school settings.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Telephone based audio-graphic technology.

IV. NEEDS:

A. Homebound instruction.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. To be determined.

VI. NATURE OF PROGRAMMING:

A. To be determined.

VII. START AND END TIME FRAME:

A. June 30, 1988

VIII. FUNDING SOURCES:

A. Technology Network Ties--1987-88
Implementation Grant
Award: $56,064

IX. EVALUATION COMPONENT:

A. Formative and summative evaluations planned.

B. A final report on services provided, evaluation completed and developmental activities for 1987-88 included:

1. Services provided to homebound students include:

   - Home instructors visited the houses of disabled children to brief parents/students on the project.
   - Classroom teachers contacted homebound children to coordinate call-in schedules.
   - Each homebound student was paired with a classroom student and a variety of sustained communications took place.
   - Home instructors conferred with classroom teachers to enhance coordination of the project.
   - Foreign language instruction was facilitated.

2. Components of the evaluation included:

   - Elementary school children (gds. 3-5) received almost three times as much instruction via system.
   - Grades 6-8 children received two times as much instruction.
   - Annotated records reveal that socialization between homebound and classroom students was enhanced.
   - While the system enhanced the appreciation of the learning process for the parents of the homebound students, it also increased their anxiety regarding the potential that their children might miss important learning if the teacher did not respond immediately to a student call.

3. Program Development activities included:

   - Effective orientation for the classroom teacher ensured success of the project.
   - Interest in visiting homebound students among classroom students was enhanced.
   - Interactive, real-time blackboarding was provided to one student.

- Taped record career information was provided to homebound students.

- Teachers have begun to appraise curriculum offerings that are more appropriate for the system.

- Modifications to the system (technical) are being explored.

The future budget required is $81,329.

LONG DISTANCE TEACHING

I. **PROJECT DATA:**

A. Title: Long Distance Teaching

B. Primary Institution:

1. Steuben-Allegany BOCES
   RD #1
   Bath, New York 14810

   Contact Person(s):

   Dr. Betty Lou Nixon, Project Coordinator
   (607) 776-7631

   René L. Bouchard, Superintendent
   (607) 776-7631

C. Participating Institutions:

1. Addison Central School District
   Addison, New York 14801
   (607) 359-2243

   Contact Person(s):

   Lyman Warner, Superintendent
   (607) 359-2243

2. Arkport Central School District
   Arkport, New York 14807
   (607) 295-7511

   Contact Person(s):

   Richard Chubon, Superintendent
   (607) 295-7511

3. Campbell Central School District
   Campbell, New York 14821
   (607) 527-8363

   Contact Person(s):

   Stephen B. Morley, Superintendent
   (607) 527-8363

4. Canaseraga Central School District
   Canaseraga, New York 14822
   (607) 545-6421

Contact Person(s):

Michael K. Hall
(607) 545-6421

5. Canisteo Central School District
Canisteo, New York 14823
(607) 698-4225

Contact Person(s):

Thomas L. McKeever, Superintendent
(607) 698-4225

6. Hornell City School District
Hornell, New York 14843
(607) 324-1301

Contact Person(s):

Harold N. Paul, Superintendent
(607) 324-1301

Francis Norton, Media Coordinator

Gerald D. Walker, Assistant Superintendent

7. Jasper Central School District
Jasper, New York 14855
(607) 792-3675

Contact Person(s):

Charles Button, Superintendent
(607) 792-3675

8. Sarona Central School District
Sarona, New York 14879
(607) 583-4611

Contact Person(s):

Charles H. Clemons, Superintendent
(607) 583-4611

9. Troupsburg Central School District
Troupsburg, New York 14885
(607) 525-6301

Contact Person(s):

Eva Foster, Superintendent
(607) 525-6301

II. GOAL AND OBJECTIVES:

A. Goal:

1. To consolidate with other school districts via a long-distance teaching project to enable Steuben County to offer various Regents Action Plan courses in order to meet the secondary education requirements, and improve high illiteracy and dropout rates.

B. Objectives:

1. To purchase, install, and test all equipment necessary to implement the long distance teaching project.
2. To create equitable educational opportunities for all students in the participating rural schools.
3. To enlarge and enrich the curriculum of the component school districts.
4. To create a communications network for prompt and inexpensive informational exchange.
5. To access the Technology Network Ties program from rural Steuben-Allegany BOCES area to a "State Network."

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. The Steuben-Allegany BOCES maintains a television translator system consisting of 14 towers that allows a teacher in the BATH BOCES studio to reach every classroom in Steuben County with a video and audio source. A return communication link to make either television or computer technology interactive is required.

B. A UHF radio frequency link in the 450-475 MH2 band to connect member schools to the BOCES teaching studio using the existing tower system at Savona will be used. All audio interfaces will use Cannon 3 pin type connectors and all computer interfaces will be RS232C.

C. The present communication software used with IBM PC' is Crosstalk XVI and with Commodore 64's is Smart 64 Term version 5 with light pen and Doodle.

D. By employing coherent communications STM-94B modem, voice and data can be transmitted simultaneously.

IV. NEEDS:

A. Students from the small rural areas are not on par in excellence with students from larger or more metropolitan settings.

B. Due to lack of teaching personnel, cost, and/or low student enrollment, many required Regents Action Plan courses are not presently available or are not cost effective for the districts to offer as part of their curriculum selection.

C. These courses could be delivered with reduced cost and time efficiency with a long distance teaching project.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. Advanced Math
2. Calculus
3. Advanced English
4. Advanced Physics
5. Foreign Language - years 3,4,5
6. Humanities
7. Business Law

B. Programs:

1. Teachers or administrators in different schools on the network can connect and exchange information.
2. Teachers will be able to access the BOCES library computer system through the network.
3. There will be an electronic mailbox that can be accessed by computer either by an external telephone line using a modem or through the network.
4. There will be computer bulletin board for teacher use.

VI. NATURE OF PROGRAMMING:

A. Video and audio are switched at the teaching center, and the picture and voice will then appear in each of the classrooms. Each remote classroom activates the "channel on" for return voice to be channeled back to the teaching center. The teacher will present lessons using blackboard, camera, videotape, computer terminal, laserdisk, graphics tablet, grafbar sonic digitizers, and light pens. Any audio source can also be sent with the video signal.

VII. START AND END TIME FRAME:

A. September 1986 - June 1988

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87,
Interactive Distance Learning - Implementation Project.
Award: $72,000

IX. EVALUATION COMPONENT:

A. The evaluation component will address these activities:

- The installation and testing of equipment to see if all systems meet the objectives for long distance teaching.
- The assessment of the number of courses now offered that previously were not and the cost effectiveness of delivering these courses through the distance learning technology.
- The conducting of surveys and questionnaires for completion by all teachers to assess the number of inservice courses offered to teachers.
- If there is a successful completion of the "network", to go on-line with Albany.

NEW YORK STATE
DISTANCE LEARNING PLANNING
PROJECTS — 1986-87 AND 1987-88

AN INTERACTIVE TELECOMMUNICATIONS SYSTEM FOR SOUTHERN AND NORTHERN WESTCHESTER SCHOOL

I. **PROJECT DATA:**

A. Title: An Interactive Telecommunications System for Southern and Northern Westchester Schools

B. Primary institution:

1. BOCES Southern Westchester
17 Berkley Drive
Port Chester, NY 10573
(914) 937-3820

Contact Person(s):

Dr. Abigail Hughes
Project Coordinator
BOCES Instructional Services Division
(914) 693-7576

C. Participating Institutions:

1. Ossining Public Schools
Administration Building
190 Croton Avenue
Ossining, NY 10562
(914) 941-7700

Contact Person(s):

John J. Humphrey
Superintendent
(914) 941-7700

Robert Huntz
Assistant Superintendent for Instruction

2. Iona College
New Rochelle, NY 10801

Contact Person(s):

John F.Noonan
Dean, School of Arts and Sciences

Dr. Susan Wilcox
Assistant Dean, School of Arts and Sciences

3. Westchester Community College

Contact Person(s)

William C. Winters
Director of Media Services
(914) 285-6855/57

4. Harrison Central School District
Union and Nelson Avenues
Harrison, NY 10528
(914) 835-3300

Contact Person(s):

Dr. Joseph Carbone, Superintendent
(914) 835-3300

Helen Blankenship
Administrative Assistant to Superintendent
(914) 835-3300

5. Briarcliff Public Schools
Ingham Road
Briarcliff Manor, NY 10510
(914) 941-8880

Contact Person(s):

Carol A. Harrington, Superintendent
(914) 941-8880

Joseph Troy
Principal, Briarcliff High School
(914) 769-9600

6. Pleasantville Union Free School District
Romer Avenue
Pleasantville, NY 10570
(914) 769-1522

Contact Person(s):

Frank Gray, Superintendent
(914) 769-1522

Michael Kolesar
Media Coordinator
(914) 769-8102 Ext. 219

7. Mount Pleasant Central School District
Stevens Avenue
Valhalla, NY 10595
(914) 769-5505

Contact Person(s):

John S. Whearty, Superintendent

(914) 769-5500

8. Public Schools of the Tarrytowns
200 North Broadway
North Tarrytown, NY 10591
(914) 631-9404

Contact Person(s):

H. Murray Blueglass, Superintendent
(914) 631-9404

Steven Dennis
Principal, Tappan Hill School
(914) 631-9252

9. Hendrick Hudson School District
61 Trolley Road
Montrose, NY 10548
(914) 737-7500

Contact Person(s):

Charles V. Eible, Superintendent
(914) 737-7500

Joseph Minadeo
Principal, Hendrick Hudson High School
(914) 737-7500

10. Croton-Harmon School District
Gerstein Street
Croton-on-Hudson, NY 10520
(914) 271-4793

Contact Person(s):

David S. Siegel, Superintendent
(914) 271-4793

Charles Keir
Principal, Croton-Harmon High School
(914) 271-2746

11. Port Chester School District
Box 246
Port Chester, NY 10573

Contact Person(s):

Harry H. Mix, Superintendent
(914) 939-7300

Marguerite Kager

Director of Instructional Media Services
(914) 939-7300

II. GOALS AND OBJECTIVES:

A. Goals:

1. To produce a system which enables students to master knowledge that meets state standards and facilitates their transition to productive adult experiences.

2. To produce a system which enables the staff to recognize and meet the educational needs of their students.

3. To enhance students' educational experiences by broadening their range of options and utilizing effective and new technologies as an integral part of the educational system.

4. To share the benefits of this project with other districts in the state and nation through awareness activities and replication assistance.

B. Objectives:

1. To complete a written feasibility study specifying the technology to be used for a distance learning project in Westchester County and to produce a rationale for the choice of technology.

2. To complete a written financial analysis delineating a mechanism for financing the implementation process and allocating costs among the participating districts.

3. To complete a written logistic study, identifying operational areas requiring coordination, synchronization or cooperation by the participating districts and to propose a mechanism for achieving the same.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Will be identified following planning phase.

B. May expand on existing program which utilizes two, one-way television channels, two-way real time audio and video communication. This system allows for full interaction between two locations.

C. Examine the possibilities of microwave and satellite.

IV. NEEDS:

A. Low and declining enrollments make it difficult for districts to offer their students the courses they need and want.

B. Many existing courses are in risk of cancellation because of low enrollment.

C. Transporting students from one site to another is too expensive, and scheduling is difficult.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum

1. Several courses that are at risk of being cancelled because of underenrollment.

VI. NATURE OF PROGRAMMING:

A. An expansion of the present system which offers two-way real time audio and video communication, and thus full interactivity between a teacher and class in one school and additional students at a second location. The nature of the expansion will be determined following planning.

VII. START AND END TIME FRAME:

A. November 1986 - June 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning Technical Planning/Feasibility Study
Award: $15,000

IX. EVALUATION COMPONENT:

A. An ongoing internal evaluation will be conducted by the project director with respect to attainment of the objectives.

B. The director will report progress at each Advisory Board meeting, and final evaluation will be submitted 30 days after the termination of the grant.

C. Project progress will be measured against the extent to which activities and products are helping to improve the learning environment.

DISTANCE LEARNING - PLANNING GRANT

I. PROJECT DATA:

A. Title: Distance Learning - Planning Grant

B. Primary Institution:

1. Broome-Delaware-Tioga BOCES
421 Glenwood Road
Binghamton, New York 13905
(607) 729-9301

Contact Person(s):

Dr. Lawrence A. Kiley, Superintendent

C. Participating Institutions:

1. Chenango Forks Central Schools
Box 204A
Gordon Drive, RD #3
Binghamton, New York 13901
(607) 648-8511

Contact Person(s):

Mr. Norman Sweeney, Superintendent
(607) 648-8511

2. Harpursville Central School District
Harpursville, New York 13787
(607) 693-2500

Contact Person(s):

Mr. Albert Oatman, Superintendent
(607) 693-2500

Dean Simmons, Computer Coordinator
(607) 693-2500

3. Maine-Endwell Central School District
712 Farm to Market Road
Endwell, New York 13760
(607) 754-1400

Contact Person(s):

Philip Burkholder, Superintendent
(607) 754-1400

Tina Fantagrossi, Computer Coordinator

4. Newark Valley Central School District
Whig Street
Newark Valley, New York 13811
(607) 642-3221

Contact Person(s):

Dr. William Sharkweather, Superintendent
(607) 642-3221

Tony Micha, Assistant Superintendent

5. Owego-Appalachian Central School District
36 Talcott Street
Owego, New York 13827
(607) 687-4550

Contact Person(s):

Dr. Francis Murphy
(607) 687-4550

Dr. John Jones, Assistant Superintendent

6. Susquehanna Vally Central School District
P.O. Box 200
Conklin, New York 13748
(607) 775-0170

Contact Person(s):

Dr. Victor Gerhard, Jr., Superintendent
(607) 775-0170

Dick Stank, Principal

7. Tioga Central School District
Tioga Central, New York 13845
(605) 687-9233

Contact Person(s):

Richard Pascuzzo, Superintendent
(605) 687-9233

II. GOAL AND OBJECTIVES:

A. Goal:

1. To acquire funds in the 1986-87 school year to begin to plan for implementing a distance learning model in this region.

B. Objectives:

1. Representatives from this project will review existing distance learning technology projects within New York State and other prominent nationally recognized distance learning projects.
2. Project staff will develop a detailed plan for the implementation of selected distance learning technology option(s).
3. Project staff will submit an application for an Implementation Grant to the State Education Department for the selected distance learning technologies option(s).

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Investigation, through visitation and written reports, of outstanding distance learning models will be conducted.

IV. NEEDS:

A. A needs assessment will be undertaken to identify (1) programs that could be maintained that would otherwise be eliminated due to increasing cost and/or declining enrollments; (2) programs that could be reestablished that have been phased out; and (3) specialized needs caused by limited enrollments and geographic isolation.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum

1. Will be identified as a result of survey.

VI. NATURE OF PROGRAMMING:

A. Will be determined after the distance learning model has been selected.

VII. START AND END TIME FRAME:

A. September 1986 - May 1987

VIII.FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning - Technical Planning/Feasibility Study. Award:$12,000.

IX. EVALUATION COMPONENT:

A. A written report will be submitted by the manager of coordination and training to the planning committee on the assessment of the visited existing distance learning models.

B. A written recommendation will contain the hardware, software, telecommunications, staffing, staff training best needed, and costs for each of the options.

INTERACTIVE INSTRUCTION/INSTRUCTIONAL NETWORKING/ DISTANCE LEARNING -- TECHNICAL PLANNING/FEASIBILITY STUDIES

I. **PROJECT DATA:**

A. Title: Interactive Instruction/Instructional Networking/Distance Learning -- Technical Planning/Feasibility Studies

B. Primary Institution:

1. Orleans-Niagara BOCES
4232 Shelby Basin Road
Medina, New York 14103

Contact Person(s):

Dr. Duane E. Hutton, Superintendent

Dr. Douglas A. David, Project Coordinator
Charlottesville and Transit Roads
Newfane, New York 14108
(716) 778-7752

C. Participating Institution(s):

1. Albion Central School
302 East Avenue
Albion, New York 14411
(716) 489-5644

Contact Person(s):

John Green, Principal
(716) 589-5644

2. Barker Central School
Quaker Road
Barker, New York 14012

Contact Person(s):

Karen Gamble, Curriculum Coordinator
(716) 795-3201

3. Lewiston-Porter Central Schools
4061 Creek Road
Youngstown, New York 14174

Contact Person(s):

Donald Yates, Director of Curriculum

(716) 754-8281

4. Lockport City Schools
130 Beattie Avenue
Lockport, New York 14094

Contact Person(s):

Dr. Russell Dever, Assistant Superintendent
(716) 439-6411

5. Syndonville Central School
Housel Avenue
Lyndonville, New York 14098
(716) 765-2282

Contact Person(s):

Richard Pucher, Superintendent
(716) 765-2282

6. Medina Central School
1016 Gwinn Street
Medina, New York 14103

Contact Person(s):

Dr. Charles Fallon, Curriculum Coordinator
(716) 798-2700

7. Newfane Central School
6273 Charlottesville Road
Newfane, New York 14108

Contact Person(s):

Wilber Dunn, Assistant Superintendent
(716) 778-7107

8. Niagara-Wheatfield Central School
2794 Saunders Stlmnt.
Sanborn, New York 14132

Contact Person(s):

Beverly Voetsch, Assistant Superintendent
(716) 731-3372

9. North Tonawanda City School
175 Humphrey Street
North Tonawanda, New York 14120

Contact Person(s):

Christine Neal, Assistant Superintendent
(716) 694-3206

10. Royalton-Hartland Central School
50 Park Avenue
Middleport, New York 14105

Contact Person(s):

Robert D'Angelo, Assistant Superintendent
(716) 735-3651

11. Starpoint Central School
4363 Mapleton Road
Lockport, New York 14094

Contact Person(s):

Rick Newton, Assistant Principal
(716) 625-7280

12. Wilson Central School
412 Lake Street
Wilson, New York 14172

Contact Person(s):

Steven LaRock, Director of Instruction
(716) 751-9341

II. GOAL AND OBJECTIVES:

A. Goal:

1. To assess whether there are innovative technology telecommunication approaches that would meet the needs of the challenge created by the Regents Action Plan.

B. Objectives:

1. To study existing distance learning models to gain a better understanding of these approaches and their effectiveness.
2. To study current technological media to gain a better understanding of their potential.
3. To analyze the technology systems available to the Orleans-Niagara area in terms of implementation and operation costs, funding sources, and engineering studies.
4. To assess what staff and student contributions could be

more effectively and efficiently offered through use of the recommended media.

5. Recommendations will be made to the Chief School Officers in terms of which technological media best fits the needs and capacities in the Orleans-Niagara BOCES area.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Will be determined following the recommendations to the Chief School Officers.

IV. NEEDS:

A. A need exists to provide some type of telecommunications assistance that would allow for a two-way exchange of information to provide students and staff with learning opportunities that otherwise would not be possible because of geographic limitations.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. Enrichment courses for gifted and talented students.
2. Advanced placement courses.
3. Science and foreign language courses.
4. Summer school programs for remedial and enrichment courses.
5. OM programs.

B. Programs:

1. Staff development training.

VI. NATURE OF PROGRAMMING:

A. Will be determined following technology recommendations.

VII. START AND END TIME FRAME:

A. September 1986 - June 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning - Technology Planning/Feasibility Study - Award: $15,000

IX. EVALUATION COMPONENT:

A. Summary reports will be prepared on:

1. existing interactive instruction models;
2. current technologies;
3. recommendations on interactive instructional system;
4. findings of needs assessment; and,
5. study of student and staff contributions.

THE COOPERATIVE/INTERACTIVE DISTANCE EDUCATION PLANNING PROJECT

I. **PROJECT DATA:**

A. Title: The Cooperative/Interactive Distance Education Planning Project

B. Primary Institution:

1. Putnam/N. Westchester BOCES
   Yorktown Heights, NY 10598

   Contact Person(s):

   Dr. John J. Battles
   Superintendent

   Chris Morton
   Project Coordinator
   (914) 245-2700, Ext. 287 or 288

C. Participating Institutions:

1. Haldane Central School District
   Craigside Drive
   Coldspring, NY 10516
   (914) 265-9254

   Contact Person(s):

   Mr. Dudley Hare, Jr.
   Superintendent
   (914) 265-9254

2. Carmel Central School District
   South Street
   Patterson, NY 12563
   (914) 225-8441

   Contact Person(s):

   Mr. Gary M. Lwenberg
   (914) 225-8441

3. Garrison Union Free School District
   Route 9D
   Garrison, NY 10524
   (914) 424-3689

   Contact Person(s):

   Dr. Carolyn F. Leary

Superintendent
(914) 424-3689

4. Brewster Central School District
Brewster, NY 10509
(914) 279-8001

Contact Person(s):

Dr. Tony Sabella
Interm Superintendent
(914) 279-8001

5. Putnam Valley School District
Putnam Valley, NY 10579
(914) 528-8143

Contact Person(s):

Mrs. Mary Anne Doyle
Superintendent
(914) 528-8143

6. Mahopac Central School District
Lakeview School
Mahopac, NY 10541
(914) 628-3415

Contact Person(s):

Dr. Jerry J. Cicchelli
Superintendent
(914) 628-3415

7. Northern Westchester/Putman Teachers' Center
North Salem High School
Route 124
North Salem, NY 10560

Contact Person(s):

Robert LaRoche
Director
(914) 669-5414

8. BOCES/CHHOP Teachers' Center
Pinesbridge Road
Administrative Center
Yorktown Heights, NY 10598
(914) 245-1050

Contact Person(s):

Adrienne Forbes

Director
(914) 245-1050

9. Columbia University

Contact Person(s):

Ellen Meier
Director/Associate Cottage Technologies
NDN-Columbia University

Richard Vigilate
Associate Professor
Ed. Administrator - Teachers' College

II. GOALS AND OBJECTIVES:

A. Goals:

1. To develop a comprehensive research and development plan to:
    - investigate the possibilities of using long-distance learning to answer precise needs in this region.
    - apply a distance learning model to problems associated with educational deprivation.
    - monitor such an educational model.
    - evaluate the educational outcomes of the model.
2. To analyze and evaluate the cost and time factors which relate to services provided through distance learning compared with those services provided in other ways.

B. Objectives:

1. To analyze which technology can be best applied successfully in this distance learning mode with particular attention to cable-to-computer video-based technology and their possible interfaces.
2. To analyze which curriculum areas best lend themselves to the application of selected technology to distance learning.
3. To analyze which forms of instructional methodology are most apt for the medium and selected curriculum areas.
4. To analyze the maximization of the "interaction factor" in the distance learning model.

5. To analyze the maximization of time and organization as part of the instructional strategy.

6. To analyze the best forms of student grouping in the application of distance learning instructional techniques (size, heterogeneous, homogeneous).

7. To develop an evaluation technique to ascertain the educational success of an instructional program delivered using distance learning technology.

8. To analyze networking techniques and management for dissemination and sharing of the program.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Will be determined following research.

B. Several technologies are being considered.

IV. NEEDS:

A. The implementation of a distance learning project will satisfy the needs of the district which result from diminished educational opportunities where:

- o students are in physically remote regions;
- o there are decreasing school populations; and,
- o access to expert teachers is limited.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum

1. Occupational Education/Middle and High School Technology
2. Handicapped Adults - High School equivalency

B. Programs

1. In-service training of teachers with emphasis on curriculum development.

VI. NATURE OF PROGRAMMING:

A. Will be determined following research.

VII. START AND END TIME FRAME:

A. September 1986 - June 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning - Technical
Planning/Feasibility Study
Award: $15,000

B. Special Legislative Grant - $20,000 to be used in the Occupational Education Application.

IX. EVALUATION COMPONENT:

A. Evaluation of the program model and potential program outcomes will be conducted.

B. Types of evaluation will include:

1. Program achievement - targeting precise objectives as defined.
2. Curriculum suitability - in the context of the developed model.
3. Individual achievement - how teachers and students handle the program(s).

OATS-GEMINI TELECOMMUNICATIONS II (OPPORTUNITIES AND AFFORDABILITY THROUGH SHARING GEMINI TELECOMMUNICATIONS II)

I. PROJECT DATA:

A. Title: Oats-Gemini Telecommunications II (Opportunities and Affordability Through Sharing Gemini Telecommunications II)

B. Primary Institution:

1. Warsaw, Perry, Letchworth Central Schools
West Court Street
Warsaw, NY 14569
(716) 786-2932

Contact Person(s):

Dr. Edmund Kulakowski
Superintendent, Warsaw Central School
(716) 786-2932

Dr. Per Omland
Superintendent, Perry Central School
(716) 237-6156

Mr. Charles Pegan
Superintendent, Letchworth Central School
(716) 493-5450

C. Participating Institutions:

1. Perry Central School
Perry, NY 14530
(716) 237-6156

Contact Person(s):

Dr. Per Omland
Superintendent
(716) 237-6156

2. Letchworth Central School
Gainsville, NY 14066
(716) 493-5450

Contact Person(s):

Mr. Charles Pegan
Superintendent
(716) 493-5450

3. Livingston-Steuben-Wyoming BOCES
Mt. Morris, NY 14510
(716) 658-2291

Contact Person(s):

Dr. Charles Holawach
District Superintendent
(716) 658-2291

4. Warsaw Central School
Warsaw, NY 14569
(716) 786-2932

Contact Person(s):

Dr. Edmund Kulakowski
Superintendent
(716) 786-2932

5. Warsaw TV

6. Cablevision TV

II. GOAL AND OBJECTIVES:

A. Goal:

1. Expand upon an existing telecommunications network by identifying a video telecommunications system which will link a college campus, three rural schools and a BOCES in order to provide low-enrollment student courses and teacher inservice in a cost-effective and quality manner.

B. Objectives:

1. Determine how the television studio already available at Brockport can be utilized to achieve the goal.

2. Determine how the existing cable TV network facilities in the school district communities can be utilized to achieve the goal.

3. Determing how the local telephone dialing exchange among the three rural public schools can be utilized to achieve the goal.

4. Determine how the existing multi-destination electronic blackboard and audio can be enhanced to achieve the goal.

5. Determine what technology options which now exist will allow students at more than one site to see the teacher and receive audio and data from other linked participating sites.

6. Determine a plan that will introduce the most feasible and cost-effective option identified from all of the options investigated.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. The integration of interactive video component to the already existing AT&T Gemini Electronic Blackboard and the Quorum teleconferencing device, which allows voice communication between the sites.

IV. NEEDS:

A. Because of lowered staffing levels, college professors are assigned to the three schools participating in the current telecommunications programs less frequently. In order to compensate, and still be able to provide the students with quality fifth year programs, the need exists to evaluate how to expand the current telecommunications network to include a video component that connects the schools with the Brockport campus on the days the college professors aren't available to be at one of the public schools.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum

1. College English, Calculus, Economics, Political Science

2. Possibility of offering fourth and fifth year language, and music theory.

B. Programs

1. Graduate credit course for teachers.

VI. NATURE OF PROGRAMMING:

A. A teacher in one location will teach via the existing system, but additionally will be fully visible through an interactive video component.

VII. START AND END TIME FRAME:

A. September 1986 - April 1, 1987

VIII. FUNDING SOURCES:

A. Technology Network Ties - 1986-87
Interactive Distance Learning-Technical Planning
Feasibility Study
Award: $15,000

IX. EVALUATION COMPONENT:

A. Monthly meetings between the telecommunications consultant and the Planning Grant Advisory Committee will facilitate the evaluation of the research effort to answer the questions outlined as the objectives for this grant.

SOUTHERN ALLEGANY NEEDS STUDY FOR LONG DISTANCE LEARNING

I. **PROJECT DATA:**

A. Title: Southern Allegany Needs Study for Long Distance Learning

B. Primary Institution:

1. Cattaraugus-Allegany BOCES
Windfall Road
Orlean, NY 14760
(716) 372-8293

Contact Person(s):

James R. Cross
Superintendent

Lyn Griffiths
(716) 372-8293

C. Participating Institutions:

1. Andover Central School
Andover, NY 14806

Contact Person(s):

Ms. Jacqualine Bellamy
Superintendent
(607) 478-8421

2. Bolivar Central School
Bolivar, NY 14715

Contact Person(s):

Mr. Gray Nammond
Superintendent
(716) 928-2561

3. Wellsville Central School
126 West State Street
Wellsville, NY 14895

Contact Person(s):

Mr. Thomas McGowan
Superintendent
(716) 593-5761

4. Whitesville Central School
Whitesville, NY 14897

Contact Person(s)

Mr. Francis Evans
Superintendent
(607) 356-3301

II. GOAL AND OBJECTIVES:

A. Goal:

1. The needs study will include four school districts in the southern section of Allegany County (Bolivar, Andover, Wellsville and Whitesville) and the BOCES. Wellsville is the largest school with a student population of 1,737; Whitesville is the smallest with 301; Andover has 486 students and Boliver has 759.

B. Objectives:

1. To determine the needs of rural schools in southern Allegheny County as they apply to long distance learning. These needs will be assessed in terms of:

    1. Regents Action Plan mandates
    2. Requirements of the Part 100 and 200 regulations
    3. Curriculum
    4. Delivery systems
    5. Course offerings
    6. Numbers of students
    7. Scheduling
    8. Cost effectiveness

2. To establish an on-going process for the assessment and implementation of ways to maximize opportunities for students in rural areas using technology.

3. To investigate all viable alternatives for method of delivery with consideration to cost effectiveness; i.e., interactive video systems, audio-graphic communications, and teleconferencing systems.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. To be determined.

IV. NEEDS:

A. Advanced courses

B. Low enrollment

C. Geographic isolation

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. To be determined.

VI. NATURE OF PROGRAMMING:

A. To be determined.

VII. FUNDING SOURCES

A. Technology Network Ties -- 1987-1988
Interactive Instruction/Instructional Network/Distance Learning
Award: $3,300

TECHNOLOGIES NETWORK TIES PLANNING PROPOSAL

I. PROJECT DATA:

A. Title: Technologies Network Ties Planning Proposal

B. Primary Institution:

1. Sullivan County BOCES
   RR 1 Box 522, Ferndale Loomis Road
   Liberty, NY 12754
   (914) 292-4332

   Contact Person(s):

   Gary J. Moore
   Superintendent

   Anne Colman
   (914) 292-4332

II. GOAL AND OBJECTIVES:

A. Goal:

1. To develop a comprehensive plan that will expand upon existing, local technology-based capacities and programs, and, through coordinated local efforts, link with other ongoing, regional and statewide projects.

B. Objectives:

1. To expand and coordinate activities of the grant writing advisory committee to include teachers and administrators.
2. To design strategies to coordinate existing and planned activities for program delivery via technology.
3. To continue to expand the level of technology awareness of area educators.
4. To conduct an inventory of present hardware.
5. To conduct a needs assessment relative to programs.
6. To prioritize identified needs.
7. To adopt a plan for establishing an ongoing technology and learning committee and activities.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. To be determined.

IV. NEEDS:

A. The need exists to explore ways to complete capacities already established by the Teacher Center and the Library System to include local electronic dissemination of information via digitized facsimiles and/or modem transmission. Information is now received from various sources, including the State Education Department with the need to be relayed to component schools. Currently, information received electronically is not forwarded using this technology. An outgrowth of this grant plan will be the awareness that this potential can be realized with minimal expansion, i.e., telephone lines.

B. Needs Areas:

1. Requirements of Part 100
2. At-risk students
3. Second language instruction
4. Seventh and eighth grade technology and home and career skills
5. Support career explorations
6. Seventh and eighth grade integration of library skills
7. Low enrollment course
8. Requirements of Part 200

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT:

A. Curriculum:

1. To be determined.

VI. NATURE OF PROGRAMMING:

A. To be determined.

VII. START AND END TIME FRAME:

A. January, 1988 - June 30, 1988

VIII. FUNDING SOURCES:

A. Technology Network Ties -- 1987-1988
Interactive Instruction/Instructional Network/Distance Learning
Award: $3,448

IX. EVALUATION COMPONENT:

A. To evaluate on the basis of the completion of the objectives.

OTSEGO-NORTHERN CATSKILLS BOCES
INTERACTIVE TELEVISION PROJECT

I. PROGRAM DATA:

A. Title: Otsego-Northern Catskills BOCES Interactive Television Project

B. Primary Institution:

1. Otsego-Northern Catskills BOCES
CYR Educational Center
Rexmere Park
Stamford, NY 12167

Contact Person(s):

Rodger A. Oesterle
Project Coordinator
(607) 652-7531

Austin Leahy
Superintendent

C. Participating Institutions:

1. Andes Central School District
Andes, NY 13731

Contact Person(s):

Charles Casler
Superintendent
(914) 676-3166

2. Charlotte Valley Central School
Davenport, NY 13750

Contact Person(s):

Ronald Whipple
Superintendent
(607) 278-5511

3. Cherry Valley Central School
Cherry Valley, NY 13320

Contact Person(s):

Carl Schrader
Superintendent
(607) 264-3461

4. Cooperstown Central School
Cooperstown, NY 13326

Contact Person(s):

Paul Lambert
Superintendent
(607) 347-3364

5. Gilboa-Conesville Central School
Gilboa, NY 12076

Contact Person(s):

Thomas Markle
Superintendent
(607) 588-7541

6. Milford Central School
Milford, NY 13807

Contact Person(s):

Dr. Gordon Hammond
Superintendent
(607) 286-7721

7. Morris Central School
Morris, NY 13808

Contact Person(s):

Elmo Barden
Superintendent
(607) 263-5110

8. Oneonta City School District
Oneonta, NY 13820

Contact Person(s):

Dr. Lowell Foland
Superintendent
(607) 432-8200

9. Schenevus Central School
Schenevus, NY 12155

Contact Person(s):

Ivan Beams
Superintendent
(607) 638-5881

10. Stamford Central School
Stamford, NY 12167

Contact Person(s):

Mr. Richard Little
Superintendent
(607) 652-7301

11. Worchester Central School
Worchester, NY 12197

Contact Person(s):

Mr. Lawrence Bobnick
Superintendent
(607) 397-8785

II. GOAL AND OBJECTIVES:

A. Goal:

1. To upgrade the present broadcasting capability in order to initiate a pilot program of interactive instructional broadcasting to selected schools in the Otsego-Northern Catskills BOCES.

B. Objectives:

1. To install and test a microwave transmitter that will replace the transmitter currently in use.
2. To test the reception capabilities of the selected schools.
3. To evaluate the capabilities of the broadcast system to sustain a high quality broadcast signal and at the same time evaluate the schools' abilities to respond to on-air questions and cues.
4. To test the system through the broadcast of an economics course combining both pre-recorded or off-air programming with live interaction with the teacher following the broadcast.

III. TELECOMMUNICATIONS TECHNOLOGY EMPLOYED:

A. Interactive broadcast via television and microcomputers.

IV. NEEDS:

A. Geographic obstacles prevent the readily available sharing of instructional and human resources.

B. Curriculum must be increased in light of the Regents Action Plan, and the schools do not have the human or fiscal resources to do this, so sharing must occur.

V. CURRICULUM/PROGRAM AREAS ADDRESSED IN PROJECT

A. Curriculum

1. Economics

VI. NATURE OF PROGRAMMING:

A. Interactive television may be broadcast with the use of the translator system within the otsego-Northern Catskills BOCES, in cooperation with WSKG-TV and New Channels Cable. This effort will test the broadcast and reception capabilities of the system and test a telecommunications call-back system from each pilot school to the television studio in Stamford, New York.

VII. FUNDING SOURCES:

A. Technology Network Ties - 1987-1988
Needs Study Grant
Award: $3,252

VIII. EVALUATION COMPONENT:

A. Measure signal strength at the schools and in the interactive classroom before and after installation of new transmitter.

B. Measure degree of success in reaching the BOCES offices in Stamford through the present telephone switching system.

C. Transfer and teaching will be evaluated for sustained signal quality, receive quality, degree of success in responding on-air, and quality of instructional format.

NATIONAL DIFFUSION NETWORK (NDN)

PROGRAMS USING TECHNOLOGY FOR INSTRUCTIONAL PURPOSES

Office of Federal Demonstration Programs
Division of School Improvement Grants Management and Compliance

SHARING SUCCESSFUL PROGRAMS

Description of Project Goals/Objectives:

To assist schools to improve their educational programs through the adoption of validated programs that meet local needs.

Target Audience:

Local school districts and BOCES. Specific target audiences within these institutions will vary according to the content of the validated program. The target audience may include students, teachers and administrators, grades PreK-Adult.

Department Contact Person:

Laurie Rowe
New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 474-2380

Field Contact Person:

Frank Thompson
Long Island University
Rockland Campus
Route 340
Orangeburg, New York 10962
(914) 359-7201

Chuck Weed
Albany BOCES
47 Cornell Road
Latham, New York 12110
(518) 786-3211

Don Tackley
Broome-Delaware-Tioga BOCES
421 Upper Glenwood Road
Binghamton, New York 13760
(607) 729-9301

Joe Rubino
College Learning Lab
Campus West, Room B-312
1300 Elmwood Avenue
Buffalo, New York 14222
(716) 893-9658

Evelyn Jones
NYC Board of Education
Div. of Curriculum & Instruction
131 Livingston Street
Room 313A
Brooklyn, New York 11201
(718) 935-4347

Harney Davey
Clinton-Essex-Warren-Washington BOCES
P.O. Box 455
Plattsburgh, New York 12901
(518) 561-0100

Nancy Piccarreto
Rochester Public Schools
Central Office
131 West Broad Street
Rochester, New York 14608
(716) 325-4560 Ext. 2701

Stu Naidich
Cayuga-Onondaga BOCES
234 South Street Road
Auburn, New York 13021
(315) 253-0361

Art Sullivan
Suffolk #3 BOCES
507 Deer Park Road
Dix Hills, New York 11746
(516) 549-4900

Paul Harris
Oswego BOCES
Mexico, New York 13114
(315) 963-7251

Scope Notes:

Sharing Success is a process based on the philosophy that a program or practice that has been successful in meeting the needs of one district can be adopted by other districts with similar needs. Sharing Success is cost effective - a district can adopt a program for a fraction of the original development costs. The validated program has been thoroughly tested so that districts adopting the program are assured that the program works. Training and technical assistance are provided to the replicating district by persons who understand not only the program's key elements and requirements for successful implementation, but also the research- and experience-based dissemination strategies that help to ensure a high quality replication in the district.

Office of Federal Demonstration Programs
Division of School Improvement Grants
Management and Compliance

RAM: READING AND MICRO MANAGEMENT

Description of Project Goals/Objectives:

The goal of the RAM Reading Lab is to provide the necessary instruction and materials to develop the reading skills of students who have skill deficiencies, and to provide enrichment where needed.

Target Audience:

Students, Teachers and Administrators

Department Contact Person:

Laurie Rowe
New York State Education Department
Room 860 EBA
Albany, New York 12234
(518) 474-2380

Field Contact Person:

Barbara Clark
Demonstration Reading Program
Sierra Jr. High School
3017 Center Street
Bakersfield, CA 93306
(805) 323-4838

Scope Notes:

This success-oriented program is conducted in a lab setting with an informal atmosphere, yet is highly structured. Students are divided into heterogeneous groups, and rotate into the lab from a subject class on alternate weeks. The lab is comprised of ten learning centers that offer a wide selection of activities using various learning modalities. The work is leveled according to students' reading abilities, which range from non-reader to past high school level. The centers focus on reading comprehension, writing, structural analysis, vocabulary, self-esteem, listening, research, library skills, recreational reading and computers. A diagnostic/prescriptive approach to teaching assures each student of individualized instruction. The skills and focus are determined for each student using the McGraw Hill's Prescriptive Reading Inventory, as a measurement tool of reading abilities. Students with like deficiencies are skill-grouped. The computers provide reinforcement, extension and enrichment experiences.

The RAM program includes a one-day staff development component. Topics include: instructional materials, individualized instructional techniques, motivation strategies, use of computers in language arts and promoting students' positive self-concept.

COMPUTER LITERACY PROJECT. A course of study designed to give all students a working knowledge of computing.

Audience Approved by JDRP for grade 9. This program has also been implemented successfully in other grade levels.

Description The concept of the Computer Literacy Project is based upon the premise that being "Computer Literate" has become a basic skill. Simply stated, this concept is: to give students a basic understanding and minimal working knowledge of most aspects of computers. The concept is essentially the same that schools strive for in basic required courses in science or math; that is, a basic working knowledge of the subject. The terms "science literacy" and "math literacy" could be aptly applied.

The course is organized in such a way as to meet the goals set forth by the concept of developing a minimal level of competency, or literacy.

Computer History—A knowledge of the men, machines, ideas, advantages and disadvantages of past and present computers. The Computing Process—A knowledge of the different means of inputting information, what the computer does with this information and the means of outputting the information. Arithmetic Hierarchy—A knowledge of the correct form of solving an arithmetic equation. Variables and Constants—A knowledge of how the computer stores data and how it labels the storage locations in which the data is placed. Flow charting—A knowledge of flow charting symbols and the logical steps to writing a program. Basic Language—A knowledge of how to write a computer program and use the correct syntax, and how to correct a computer program if it has a mistake. Computer Vocabulary—A knowledge of the words and slang words used to describe and discuss computers. Writing Programs—The ability to apply all of the information which has been learned.

Requirements Provide enough hardware to have one computer for approximately every two students who will be enrolled in a given class at a given time. Have a person to teach the course who is already computer literate. Provide release time and expenses for a one-half day training session for the teacher.

Services An NDN funded Developer Demonstrator Project An NDN Lighthouse Project. Awareness materials are available at no cost. Visitors are welcome at project site any time by appointment. Project staff are available to attend out-of-state awareness meetings (costs to be negotiated). Training is also available at adopter sites (costs to be negotiated). If the school does not already own enough hardware to provide one computer for approximately every two students, funds will need to be allocated to purchase whatever brand the school prefers; approximately $25.00 dollars for printed materials; the cost of participating in a training session. This is only to cover the expenses of the trainer and will vary depending on the location and number of persons being trained.

Contact *David Woolly, Project Director; Computer Literacy Project; Alma Public Schools; P.O. Box 1018; Alma, AR 72921. (501) 632-4791.*

Developmental Funding: Title IV-C and Local

JDRP No. 83-38 (3/29/83)

CUPERTINO CONCEPT: COMPUTER LITERACY AND BEYOND PROGRAM. A staff development program for the integration of technology into the curriculum (K-8).

Audience Approved by JDRP for students in grades K-8 and as a staff development project.

Description The Cupertino Concept, through an integrated use of technology in the curriculum, aims to develop fully functional students empowered to deal with an information-based society through development of skills for assessing, creating and manipulating information products and services. To realize this goal, a process has been developed whereby teachers help students use technology (computers, etc.) as a tool to enhance learning in the curriculum content areas.

There are six strands in the Cupertino Concept model: Philosophy, Software, Hardware, Lead Teacher Network, Staff Development, & Curriculum. The ultimate goal of each strand is the development of a local plan to assist the adopter.

Requirements The elements of replication for this program include management and staff training, technology planning, technical support, curriculum development, and evaluation. Adopters can be trained to implement a similar program in a one-day workshop. A more comprehensive two-day workshop is also offered.

Costs Costs consist of honorarium, travel and per diem toa be paid by adopter/facilitator. Trainings are tailored to client needs. Additional materials include a training manual and computer literacy guide (Training manual [including computer literacy guide] - $75. Computer literacy guide alone - $10.00).

Services Awareness materials are available at no cost. Visitors are welcome on site by appointment. Project staff are available for awareness meetings (cost to be negotiated).

Contact *Ms. Barbara Caligiuri; Cupertino Union School District, 10301 Vista Drive, Cupertino, CA 95014; (408) 252-3000 ext. 406.*

Developmental Funding: ESEA Title IV-C

JDRP No. 83-37R (3/30/84)

MICRO/MATH. A mathematics program that applies problem solving and programming skills in a proven instructional curriculum and integrates the computer into the classroom with career units.

Audience Approved by JDRP for students, grades 7, 8 general math, and computer literacy (adaptable for career ed, basic programming and the 6th grade).

Description MICRO/MATH is a problem solving project that integrates three critial needs of mathematics education into a cost effective supplementary curriculum:

1) Students need to solve problems,
2) Students need to apply computational skills,
3) Students need to be able to use computers and mathematics in jobs.

The curriculum parallels the traditional mathematics classroom program. Students use worksheets with and without microcomputers for 35 to 40 lessons for 1/5 of the math time. The project teaches them:

*to improve problem solving and logical thinking skills: rounding, estimating, processing information from graphs, tables, charts, diagrams, and solving mathematics word problems related to careers.
*to effectively apply computational skills-decimals, fractions, and percentages.
*to apply programming skills to job-related problems.
*to use computers with confidence and skill.

The project does not require restructuring of the school curriculum nor additional personnel. It draws upon many modes of instruction: cooperative, individual, and total class.

An independent evaluation showed that students who spent one-fifth of their math time in the project experienced significantly more growth on the Comprehensive Test of Basic Skills (CTBS) and the MICRO MATH Criterion-Referenced Test (CRT).

Requirements Adopting teachers need project materials and one or two days of training, depending on their programming skills. A training packet (approximately $80 per classroom) includes a teacher's guide, math and computer-in-jobs worksheets, transparency masters, problem-solving activities, management plan, testing instruments and student workbooks. Minimal access to a computer is advised.

Services Awareness materials are available. Visitors are welcome at demonstration sites by appointment. Project staff is available to attend out-of-state awareness and training sessions (costs to be negotiated). Implementation and follow up activities are available for adopter.

Contact *Director, Education and Technology Foundation; Far West Laboratory, 1855 Folsom Street, Room 544; San Francisco, CA 94103, (415) 626-3070.*

Developmental Funding: JDRP No. 83-31 (3/17/83)

PHYSICS—TEACH TO LEARN: AN EDUCATIONAL PROGRAM THAT WORKS

A physics instructional program using teacher-controlled computer simulations and supporting curriculum materials.

Audience Approved by JDRP for 12th grade physics students.

Description The Physics—Teach To Learn program provides both teachers and students with instructional materials and processes that facilitate the exploration and illustration of selected physical events that have been found to be most frequently misunderstood by students, and most difficult for the teacher to illustrate in the classroom, and then tests the students' understanding and ability to make application of the physics concepts underlying those events.

The program's fifteen instructional modules with teacher-controlled computer simulations and supporting curriculum materials, developed by a committee of Los Angeles Unified School District master physics teachers with university support, were designed to provide students with fundamental qualitative understanding of physical events in selected topic areas. The computer simulations require the learner to make a judgment about a physical event. This judgment, based upon learner experience, and/or observation, often reveals misconceptions based upon defective logic. After the initial judgment (pretest), the teacher then utilizes the computer simulations(s) to lead the student through the steps of exploration, development, and application. By using this step-by-step method, the teacher is best able to guide the correction of student misconceptions about the physical events under consideration. After this process has been completed, the student takes a formal paper/pencil posttest. Each topic is accompanied by extensive written curriculum material designed to enhance the teacher's ability to present the key concepts.

Requirements The Physics--Teach To Learn project developed materials were designed to be adaptable to any course approach and compatible with any text format. The project's curriculum package is comprised of 15 content modules, each with its own set of computer simulations, pre and post tests, and supplementary curriculum materials designed for teacher use. These project developed materials have been packaged to facilitate dissemination and implementation at other sites. The program's computer disks are designed for use with either the Apple IIc or IIe computer, a graphics printer, and a monitor. For classroom utilization, a 19-inch or larger television is recommended for display. No prior computer experience is necessary to effectively use the project's computer software or curriculum materials. Experienced physics teachers can be trained in the philosophy, content and use of the modules in four hours. New and/or "crossover" teachers will need two days of training.

The Physics—Teach To Learn program's curriculum materials—including the computer disks—are available for a cost of $300 per set. Project Trainers will conduct training sessions at no cost to the adopting agencies, other than those attendant to travel, when training occurs during the "on-time" school year of the trainers. A negotiable honorarium of $150-$250 per day will be requested when the time or service of a trainer is contracted over a weekend or during the "off-time" portion of the trainer's school year. Districts may also have to consider the costs attendant to releasing their teachers to participate in the training sessions. Finally, if the adopting site does not have the equipment required to implement the program, the additional cost will be approximately $1,550. Once the curriculum materials have been purchased and initial training has occurred, the program can be operated with no additional cost factors.

Services Awareness materials are available at no cost. Visitors are welcome by appointment at the project's demonstration sites. Project staff are available to attend out-of-state awareness meetings. Training can be conducted either at the project site or at specified adopter sites.

Contacts ***Mary Ann Sesma, Principal, Bell High School and Project Director, (213) 560-1800. Charles Schleiden, Project Disseminator, Bell High School, 4328 Bell Avenue, Bell, CA 90201, (213) 773-2408. Leni Poster, Specialist, Grants Assistance Unit, Los Angeles Unified School District, 450 North Grand Avenue, Room A-307, Los Angeles, CA 90012, (213) 625-6596.***

Developmental Funding: ECIA Chapter 2 JDRP No. 86-16 (9/25/86)

COMPUTER-ASSISTED-DIAGNOSTIC-PRESCRIPTIVE PROGRAM (CADPP) in Reading and Mathematics. A computer-managed program generating personalized educational plans (prescriptions) for a diagnostic/prescriptive approach to instruction.

Audience Approved by JDRP as a reading program for grades 3-9 and as a mathematics program for grades 3-7.

Description The CADPP Software Program was designed to assist teachers who utilize a diagnostic/prescriptive approach to teaching. The CADPP software generates customized learner prescriptions and individualized educational plans. The relational data base permits the user to load files with: 1) learning characteristics of individual students to include age, instructional level, identified learning modality; 2) a skills list or continuum; and 3) skill related characteristics of available instructional materials to include readability level, interest level, and learning modality.

When the skills file, students file, and instructional materials file are loaded, customized prescriptions can be produced for each participating student, based upon the skills requested.

Since 1979, the CADPP Software Program has been adopted in 46 states by 1,187 schools. Approximately 3,500 staff (user's groups) have been trained with over 175,000 students participating.

The CADPP software requires no programming skills and is menu driven. It can be used in all curriculum and content areas. The program can be utilized by one classroom teacher, a total program staff, or district wide. It has been used to meet the guideline requirements of ECIA Chapter 1 and Migrant Programs, competency based education programs, standards of learning, and special education programs.

Program effectiveness at the developer site is documented by a month and a half gain per month of instruction, utilizing the SRA Achievement Series, the California Achievement Test, and the CADPP CRT Series. Sustained gains studies support retention of gains. Adopting sites document similar gains.

Requirements The software operates on the Apple II+, IIe, IIc, TRS 80 Models III, IV, and 1000. The program requires 64K, two disk drives, 80 column card, monitor and printer. The system is multi-user and not copy protected. The program disk has a capacity for 150 skills for two curriculum areas.

The student file is limited to 100 students with the following characteristics: name, age, grade, gender, reading level, learning modality. The prescription file has a limit of 1,600 instructional activities per disk which can include: workbooks, computer software, audio-visual materials, games, basal programs, and teacher-made activities.

Services Awareness materials are available at no cost. Visitors are welcome at project site by appointment. Demonstration sites are also available for visitation by appointment. Project staff and certified trainers are available to attend out-of-state awareness meetings; conduct training either at adopter site, or developer/demonstration sites; and to provide follow-up services at adoption site and/or through written correspondence and telephone consultation. Costs are negotiated for services that require travel for CADPP staff. A fee of $500 is charged for the CADPP software, which can be copied within the adopting district. Members of consortiums pay a $50 user's fee, and $500 is charged to the consortium. Updates and revisions are forwarded at no extra charge, and consultation from CADPP programers and/or administration is included in this cost. The CADPP Criterion-Referenced Tests (optional material) are available at $3 a booklet.

Contact *Debra J. Glowinski, TEC, 232 W. Sabal Palm Place, Longwood, FL 32779. 1-800-237-1585.*

Developmental Funding: USOE ESEA Title I

JDRP No. 79-15 (6/12/79)
Recertified (12/84)

COMPUTERONICS: A course in computer literacy, programming and problem solving.

Audience Approved by JDRP for gifted and high-achieving students in grades 6 and 7. This program has also been used with students of a wide range of abilities in grades 5-8.

Description **Computeronics** provides students an opportunity to: learn a simple programming language; use computers to solve problems; and see the ways that computers affect their lives. The 35-40 hour course consists of two units:

> "Computers in Society" conveys information about the history of computers, their present and future uses, and computer-related careers. The student text (updated in 1986) includes articles, photos, puzzles and a glossary. Because of the rapid change in technology, this unit is easily augmented through inclusion of current magazine and newspaper materials.
>
> "Problem Solving with Computers" teaches students to program using the BASIC computer language. Students use their programming skills in solving word problems. This unit uses a combination of paper and pencil and hands-on activities and allows as many as 10 students to work with a single computer. The materials are not hardware specific and can be easily adapted to a variety of delivery systems.

Both units use a mastery learning approach; each unit objective must be mastered before a student moves on to the next. The management system built into lesson books, activities and mastery answer book allows students to move at their own pace. Suggestions for teachers are included in the teacher's guides, which include both facilitative and directive classroom organization. The **Computeronics** material has been used in many states as a curriculum for teaching newly mandated minimum skills in computer literacy. In addition, the material has been used with teacher inservice and adult education classes.

Most of the **Computeronics** materials are non-consumable and may be reused. The approximate cost of materials for a new class of 20 students and 1 teacher is $370.00 and includes the 2 teacher guides and activity packets teachers receive during training. Test Packets and Activity Packets are consumable and should be ordered for subsequent classes.

Requirements Adopting teachers attend a two-day training session. Students need the course materials and access to a computer.

Services Certified turnkey trainers are available to conduct two-day training sessions that accommodate 25-30 teachers. Information on materials and training can be obtained by contacting the project office. Awareness materials are available at no cost.

Contact *COMPUTERONICS, 1940 N. Monroe St., Suite 50, Tallahassee, FL 32303. (904) 487-1520.*

Developmental Funding: USOE ESEA Title IV-C

JDRP No. 80-39 (12/23/80)
Recertified (2/85)

PROJECT RECIPE (Research Exchange for Computerized Individualized Programs of Education). An instructional management system to increase I.E.P. objective attainment K-6 using a micro-computer based recordkeeping system.

Audience Approved for SLD students in grades K-6. Curriculum materials and computerized management system of objectives for reporting purposes have implications for elementary basic skill instruction with regular classroom students.

Description The RECIPE instructional management system provides banks of instructional objectives in the basic skill areas of Reading, Writing, and Mathematics organized into learning maps which provide the special education teacher with an organizational pattern for planning instruction. Banks of objectives are also provided for the areas of Foundation (pre-reading), Articulation, Socialization, and Motor Skills. The objectives are accompanied by two forms of a criterion-referenced assessment system and a listing of over 2,400 instructional strategies correlated to each objective by number. Student Activity Books and Audio Tapes are available for 25 of the basic skill learning maps with which the target population displayed the most difficulty. Teacher Guides and Answer Books are provided for the Student Activity Books. Additional planning materials, Parent Guides, and a student reward system are built into the RECIPE material package and delivery system process.

Micro-computers are employed as the vehicle for storing student demograhic data, creating I.E.P.'S and implementation plans, tracking student progress, and generating I.E.P.'s and Progress Reports in compliance with Federal Guidelines. Teachers interested in using RECIPE must undergo a 2-day inservice training session which includes the use of the micro-computer management portion. Student and program data are stored on floppy diskettes and RECIPE provides a detailed User's Guide for ease of computer interaction.

Requirements The RECIPE instructional management system may be implemented in a variety of educational settings ranging from a single classroom setting with one teacher and up to 30 students to a district level with multiple teachers and students. Data is managed by micro-computers in all settings. Training in the use of RECIPE instructional materials, processes, and micro-computer program uses is required. No additional staff are required for program implementation.

Services Limited amounts of awareness materials are available at no cost. As a Lighthouse Project, RECIPE welcomes visitors to the project site any time by appointment for demonstrations and observations. Project staff are available to attend out-of-state awareness meetings on a limited basis, and training is available at both the project site and adopter sites (price to be negotiated). Implementation and follow-up services are available to adopters (price to be negotiated). Replication costs will vary based on the number of teachers and students for one classroom (one teacher serving 30 students); approximate cost for program installation and training is $61.69 per student per year. Based on usage in at least two classrooms with 60 students, installation cost per student drops to $31.00 per student per year. Micro computer hardware costs are not figured into replication costs. Continuation costs for RECIPE are estimated to be $18.50 per year, per student. Complete price listing is available.

Contact *Sanders Bell, Director; Project RECIPE; or Priscilla Cady, Training Specialist; Project RECIPE; 4747 S. Tamiami Trail; Sarasota, Florida 33581. (813) 953-5000, ext. 141 or (813) 924-5800.*

JDRP No. 83-10 (3/4/83)

TITLE I MATHEMATICS COMPUTER ASSISTED INSTRUCTION (CAI). A diagnostic/prescriptive pull-out mathematics program with students receiving 10 minutes of daily concentrated drill on CAI.

Audience Approved by JDRP as a mathematics program for Title I students in grades 3-6.

Description Lafayette Parish had an effective diagnostic-prescriptive mathematics ESEA Title I pull-out program. In order to increase growth in mathematics, computer-assisted instruction was added to an already effective math program. The program is operated with close coordination of math-lab instruction and daily CAI drill. The CAI program adjusts instructions to the level of the students and provides immediate feedback to the student. The CAI program provides daily, weekly, and monthly descriptions of progress and areas of difficulty which the classroom teacher can use to correct specific conceptual misunderstandings. Classroom instruction is imperative in providing conceptual understanding and remediation. Daily CAI drill provides the practice which Title I students especially need. This particular program was operated with 40 minutes a day of mathematics laboratory time and 10 minutes of CAI. The particular program was devised by Computer Curriculum Corporation of Palo Alto, California.

The addition of CAI instruction produces significantly superior achievement when compared to standard mathematics laboratory instruction.

Requirements Math Lab-CAI can be adopted to supplement any regular program if 200 students are enrolled. Two to three days of inservice training are necessary. The project used Computer Curriculum Corporation Programs from Palo Alto, California. Correlation between your project and CAI must be established.

Costs In addition to your regular program, the added dimension of Computer Assisted Instruction costs approximately $200 per student if at least 200 students are enrolled. As the number of students in the program increases the cost decreases proportionately. Since installation costs occur only in the first year courses or purposes, the number of students can be reduced.

Services Awareness materials are available. Visitors are welcome at project site anytime by appointment. Project staff are available to attend out-of-state awareness meetings (costs to be negotiated). Training is conducted at project site (costs to be negotiated). Training is also available at adopter site (cost to be negotiated). Implementation and follow-up services are available to adopters (costs to be negotiated).

Contact *Mr. Marion J. Cortez, Supervisor; Federally Supported Programs; Lafayette Parish School Board; P.O. Drawer 2158; Lafayette, LA 70502. (318) 232-2620, EXT. 307.*

Developmental Funding: USOE ESEA Title I JDRP No. 82-46 (9/29/82)

MERRIMACK EDUCATION CENTER CAI PROJECT. A computer-assisted instructional program to augment the basic skill areas of reading and mathematics.

Audience Approved by JDRP for compensatory education students, grades 2-9.

Description This project provides individualized, structured, and sequenced drill and practice and tutorial services for students in Chapter I classrooms. As part of a comprehensive system, the program combines commercially available courseware with supportive organizational arrangements including staff training, materials, hardware and software maintenance, learning environment management, and technical assistance.

Based upon each student's measured strengths and weaknesses, teachers place him/her in the appropriate instructional level. Daily, all eligible students receive 30 minutes of individually tailored basic skills remedial instruction. Materials for instruction have been organized in a series of age/grade curriculum strands that are available in both computer-assisted instruction (CAI) and paper-and-pencil form. Two-thirds of class time is spent in small group or tutorial sessions with the teacher. The remaining third is spent interacting with the CAI system. Information is presented to each student in small chunks. Depending on what type of response a student makes, the computer takes an appropriate step--for a correct response, reinforcement and new material; for an incorrect response, a tutorial with additional practice. The teacher can assign the student a special drill for remediation when necessary. The computer management system keeps track of each student's progress, and generates reports for use by teacher and administrators. Procedures have been adapted to serve a multi-school district delivery system, and a management technical assistance system exists to guide implementation of the program as a supplement to the regular program. The technology activities have been identified as an NDN Technology Lighthouse Center. In addition to the JDRP approved program, visitors to the project site participate in applications of the uses of computers in education, as outlined in the following components: teacher/administrator training; software/courseware training; hardware and cooperative purchasing; data base management, and comprehensive planning. Computer literacy seminars are offered to school districts and software is available for preview.

Use of CAI in reading over one school year improved student performance in reading. With 10 minutes of CAI a day, students made significant gains in reading skills over and above those of a comparison group that received traditional Chapter I reading instruction. Students in math and reading programs using CAI consistently showed greater NCE gains than did their peers who were instructed conventionally.

Requirements Adopter would install a cluster of eight terminals, a central processing unit, and a printer in a computer laboratory setting (single classroom is adequate). Classroom teachers can use the system with very little training. The programs of Lighthouse can also be adopted as individual components (e.g. Computer Concepts, Computer Applications Planning, and Curriculum Applications of Technology).

Services Awareness materials (including evaluation report) available. Visitations and training opportunities scheduled weekly. Project staff available to attend awareness meetings in states. Training done at adopter site as well as project site. A Computer Applications Planning Guidebook is available for $9.75 and a Curriculum Technology Handbook for $20.00.

Contact *Richard Lavin, Ed.D, Director; Merrimack Education Center Computer-Assisted Instruction Program; 101 Mill Road; Chelmsford, MA 01824. (617) 256-3985.*

Developmental Funding: USOE ESEA Title I

JDRP No. 82-34 (6/2/82)

QUILL: Microcomputer-Based Writing Activities

Audience Approved by JDRP for all students in grades 3-5.

Description QUILL is a microcomputer-based writing program that provides students with software tools for planning, composing, revising, storing, retrieving and printing written text. QUILL also provides teachers with training and assistance to integrate the software into classroom writing instruction and writing in content areas. The primary purpose of QUILL is to provide students with motivating writing activities in a structured, computer-based format, which allows for flexiblity in addressing student ability and interest. Additionally, QUILL offers students use of "real life" microcomputer tools, such as a text editor and message system. Finally, QUILL provides teachers with tools to supplement and expand language arts and writing instruction, especially in the areas of expository and persuasive writing.

Intermediate level elementary students (grades 3-5) have significantly improved ($p. < 05$) the quality of their expository writing, as measured by pre and post writing samples in comparison with a matched control group.

Requirements A three-day teacher training workshop is highly recommended to implement the program. Software must be purchased from a commercial publisher. At least one computer system per class (Apple with 64K, two drives, 80 column display, green screen monitor, and printer). Computer lab setting is acceptable. No additional staff is required. A local facilitator should be designated from existing personnel.

Services Visitors are welcome at demonstration sites located throughout the country. Awareness materials are available at no cost. Project staff amd certified trainers are available for presentations and training on a limited basis. Costs for all services will be negotiated.

Contact *Denise Blumenthal or David Zacchei, The NETWORK Inc., 290 South Main Street, Andover, Massachusetts 01810 (617) 470-1080.*

Developmental Funding: U.S. Department of Education   JDRP No. 84-10 (3/30/84)

PROJECT 50/50: A computer technology curriculum for secondary school students.

PROJECT
FIFTY:FIFTY
the computer program

Audience Approved by JDRP for secondary school students.

Description Project 50/50 is a computer technology program designed to assist secondary school students in gaining computer application skills while increasing their levels of social functioning and academic achievement. The project was developed and implemented as an education/industry partnership and has as its target population, ethnic minorities, females and disadvantaged youth.

The uniqueness of the program is found in its comprehensive approach. The curriculum focuses on computer applications and consists of four components:

•COMPUTER AS A SUBJECT covers current and future computer applications, history, terminology, and robotics.

•COMPUTER AS A TOOL introduces programming in LOGO and BASIC languages and the use of graphics and word processing software.

•COMPUTER AS A CAREER focuses on tech-based careers and job opportunities, job search techniques, interviewing skills and inter-personal relations.

•COMPUTER AS A METAPHOR includes exercises in orienteering, and uses map and compass skills in relation to programming a computer.

When a school adopts Project 50/50, a network with local businesses is either begun or enhanced; teachers are trained; collaboration between schools is encouraged; and a curriculum is established. In contrast to comparison groups, Project 50/50 students have demonstrated significantly greater acquisition of computer skills (as measured by the Computer Skills Test), self-esteem (as measured by the Tennessee Self-Concept Scale), and interest in math, science and technology (as evidenced by student schedules), based on a one-year intervention period. Following a four-year plateau of achievement scores for math, reading and language, Project 50/50 students demonstrated significant gains compared to a norm group.

Requirements Adopting school district should provide two days of training for the computer experienced teaching staff. One desk-top microcomputer and a printer should be available for every two students.

Services Awareness materials are available at no cost. Visitors are welcome by appointment. Project staff is available for out-of-state awareness workshops (cost to be negotiated). Training is available for potential adopters at their home site or at the Oxford site, if more convenient. Excellent training materials are available for teachers and students. Costs for local schools include teachers, equipment and software. Project 50/50 will aid school in acquiring equipment and software at low cost, if needed.

Contact *Robert W. Richardson, NDN Coordinator; French River Education Center; North Oxford, MA 01537, (617) 987-1626.*

Developmental Funding: Local

JDRP No. 84-13 (3/26/84)

CAM: DEMONSTRATION EVALUATION CENTER. Dissemination/implementation of computer assisted instructional management systems.

Audience Approved by JDRP as a program for evaluating and monitoring instructional objectives grades K-12.

Description CAM is a microcomputer based instructional management system designed to support objective-based instruction, competency based instruction and mastery learning approaches using teacher-defined objectives.ed instructional management
system that provides relevant data to teachers and students after each test taken on course objectives. Also available for inclusion in the printout are data on class performance on each objective and a test form evaluation. The time needed to get this information back to a classroom that has just been CAM tested is generally 24 to 48 hours from the date of testing.

Teachers using the CAM system of monitoring student achievement first commit themselves to basing their instruction on course objectives developed by curriculum groups and teaching teams in the district. They also test the course objectives on a regular basis: every two to three weeks. The objectives are tested by teacher-developed test items generally five to ten for each objective. Most teachers request tests that are pretest, posttest, and retention test in one.

The system is used in classrooms that are group-paced, individualized, multigraded, etc. Approximately 1,000 classrooms (grades 1-12) are using the system in subject areas including math, science, social studies, English, and reading. The Evaluation Center has developed techniques to assist teaching teams in identifying instructional strengths and weaknesses.

This project has been identified as an NDN Technology Lighthouse Center. In addition to the JDRP approved program, visitors to the project site can see other applications of the uses of computers in education.

Requirements CAM is available for adoption in a single classroom or building. Adoption site personnel must have a willingness to develop instructional objectives/test items, have access to computer facilities (micro, mainframe, etc.), and must participate in staff development training.

Services Awareness material packet available at no cost. Visitors are welcome at project site by appointment. Project staff available for awareness meetings, training, implementation, project evaluation consultation, and follow up services (costs to be negotiated). Microcomputer/printer/optional card reader: $2,000-$2,500; CAM software: $400; Mastery Management System: $400; local staff workshop time (one or two days), adopter implementation support, teacher and aide time: $2,000.

Contact *Marie Weld, Don Sension, Lee Rodel, John Erickson, or Pam Askeland; Evaluation Center/Room 246; Hopkins Public Schools; 1001 State Highway 7; Hopkins, MN 55343. (612) 933-9230.*

Developmental Funding: USDE Title III

JDRP No. 81-31 (315/85)

UTILIZING COMPUTERS IN TEACHING SECONDARY MATHEMATICS. Asbury Park (N.J.) program of microcomputer-based instructional materials and techniques to improve mathematics skills.

Audience Unanimous approval by JDRP for students of all skill levels, grades 9-12. Program materials also successfully used in grades 7-8 and 13-14.

Description This project's goal is to improve mathematics skills through the use of microcomputer-based instructional materials and techniques. The project's package consists of two teachers' manuals and six disks containing approximately 80 computer programs which encompass six areas of secondary level mathematics—Algebra I & II, Geometry, Trigonometry, Calculus and Applied Mathematics. While some programs are tutorial in nature, others are drill and practice or simulations using graphics. The programs can easily be integrated into any traditional math curriculum without the need to hire any additional staff.

A typical approach to implementing the project materials is to introduce the topic of study using traditional methods of instruction. Students are then instructed to access the specific computer programs designed to apply the concept or skill and obtain detailed explanations and instructions as to how to proceed with independent investigations utilizing the information provided. During this time, the teacher serves as a resource person providing individualized assistance. A follow-up discussion is held at the end of the class period and work is assigned from the text or from a worksheet generated from the computer program.

FOCUS Math enhancement for students and an alternative teaching tool. During the training, emphasis is placed on curriculum and program integration for long-term implementation into a school system.

Requirements No additional or special staff is necessary to replicate the project. Approximately four hours of training are required. Request a "turn key" or Certified Trainer for each state implementing the project.

Services Awareness materials are available upon request. Implementation and follow-up services available to adoptors. A fee of $150 is charged for the teachers' manuals and computer programs; Consortium cost $450. For further information contact project staff listed below.

Contact *Judy F. Smith, Director or Christine W. Perry, Project Coordinator, Asbury Park Board of Education, 1506 Park Avenue, Asbury Park, New Jersey 07712 (201) 776-2619 or 774-3412.*

Developmental Funding: USOE ESEA Title IV-C

JDRP No. 82-17 (4/29/82)

COMPUTER UTILIZATION IN EDUCATION (CUE). A remedial reading and mathematics program utilizing microcomputers.

Audience Approved for educationally disadvantaged students in grades 3-8.

Description The overall goal of Project CUE is to increase achievement in reading and mathematics through use of the micro-computer as an integral part of the instructional and management processes, coordinating classroom instruction with Title I supplemental services. CUE is a sequentially organized, criterion-referenced reading and mathematics curriculum which can be adapted to incorporate both a state syllabus and local curriculum objectives. Criterion-referenced objectives are correlated with the skills continuum of commercially developed, computer-assisted, instructional programs and other commercial materials. The CUE curriculum includes assessment techniques which may be utilized for the purposes of student diagnosis, placement, and instructional management. The program is designated for a laboratory setting but may be used as an in-class program. Students are scheduled for five 30-minute sessions of remedial instruction per week. Time on the computer will vary depending upon student remedial area(s) and instructional needs. A student is scheduled to use the computer daily for approximately 15 minutes per session, 75 minutes weekly. The student spends remaining instructional time on reinforcement activities or on alternate, related instructional materials. One microcomputer can service 24 target students, based on a six hour day. Planning time is provided for the laboratory staff on a daily basis. Teachers, administrators, support staff, and CUE staff utilize the laboratory to access student records (criterion-test results and computer-managed instruction test results) to monitor and access student progress. These records can be viewed on a terminal or produced as a printout. Keeping the equipment in a laboratory setting allows flexibility in teacher-student scheduling and permits additional classroom coordination in the use and development of microcomputer instructional materials which correlates to the project-developed reading, mathematics, and computer awareness curricula. Using the Iowa Test of Basic Skills (Reading Comprehension and Total Math), gains of project students exceeded the expected gains based on comparisons with the norming sample. The percentage of students scoring below the 34.4 NCE on the Reading Comprehension subtest declines from year to year; 20% of the students achieve a posttest score at or above the 41.9 NCE and no longer need program intervention.

Requirements Project CUE may be implemented at the school or district level. Supervisory personnel, a certified reading teacher and a paraprofessional should participate in training activities. Attendance in a one or two-day workshop is essential to understand the CUE process, determine curricula needs, and gain in microcomputer skills. After program implementation, follow-up visits are made by demonstration staff.

Costs Installation costs vary greatly regarding equipment needs, commercial software purchased, and to what degree of implementation a district desires. As the number of students in the program increases, the cost decreases proportionately. One set of training manuals, materials, and on-site training is provided by the Project; adopters pay own travel and lodging expesnses.

Services Visitors are welcomed by appointment. Awareness materials are available at no cost. Project staff are available to attend out-of-state awareness meetings (costs to be negotiated). Training is provided at project site (adopter pays its own costs). Training is also conducted at adopter site (costs to be negotiated).

Contact *Carol Heiselman/Director, Christine Gilbert/Demonstrator; Project CUE; Central Square Central School District; Central Square Central School District; Main Street; Central Square, New York 13036. (315) 668-2611, Ext. 265.*

Developmental Funding: JDRP No. 83-36 (3/28/83)

INDIVIDUALIZED PRESCRIPTIVE ARITHMETIC SKILLS SYSTEM (IPASS). A computerized criterion-referenced testing and instructional program in basic mathematical skills utilizing microcomputers.

WE ALL PASS WITH ipass

Audience Approved by JDRP as a supplementary mathematics program for grades 5 and 6. Developed as, and is an ongoing Chapter I program.

Description IPASS was designed to increase the achievement of intermediate grade students in mathematics through the use of advanced technology in the form of microcomputers. IPASS employs microcomputers and specially designed software as an integral part of both instruction and the management of student progress in a compensatory education setting. IPASS is an efficient and highly cost-effective project.

IPASS includes locally developed criterion-referenced tests, instructional and management software, cross-referenced tests, cross-referenced instructional resource file, and guides for teachers and students. IPASS objectives can be used to supplement most mathematics curricula without modification.

IPASS is designed as a "pull-out" program in which the student receives two 30-minute sessions per week. IPASS can be adapted to a classroom or laboratory setting. A teacher or aide using two microcomputers can serve up to 40 students per week. Locally developed instructional materials can be integrated into the remediation process. IPASS is available for R/S TRS-80 models III and IV, R/S Color disk (32K) Apple IIe IBM/Compatibles. Cassette version no longer available. Adopted in more than 120 school districts in 20 states. Original funding Chapter I. Evaluation data is available upon request.

Requirements An approved microcomputer and printer must be available. A training program is required for school personnel implementing the program. No prior experience with computers is necessary.

Costs A fee of $250 is charged for the IPASS software, including computer programs, criterion-referenced tests, student profile sheets, instructional resource file, and procedure guides for teachers and students. One copy of these materials is included and permission is given to reproduce any and all of these materials and programs in quantities necessary for the adopting school district.

Services Demo diskette for IBM/Compatibles, Model III, IV and color Apple IIe available $20. Awareness materials available at no cost. Visitors are welcome at any time by appointment. Project IPASS staff members are available to explain and demonstrate IPASS both at in-state and out-of-state awareness meetings (cost to be negotiated). Training is conducted at the project site and is also available at an adopter site (cost to be negotiated). Implementation and follow-up services are available (costs to be negotiated). Telephone hot-line is available to adopter districts at any time during normal hours.

Contact *Robert R. Reynolds, Director; Project IPASS; Pawtucket School Department; Park Place; Pawtucket, RI 02860. (401) 728-2120.*

Developmental Funding: USOE ESEA Title I

JDRP No. 82-15 (5/12/82)

BASIC LITERACY THROUGH MICROCOMPUTERS (Keyboard, Reading, and Spelling Skills). A program teaching students to use a microcomputer keyboard in the process of learning to type, read, and spell. Mastery is built into the program.

Basic
Literacy
Through
MicroComputers

Audience Approved by JDRP for students grade one through grade six. Supporting data also were gathered from students in grades 7-8.

Description Basic Literacy Through Microcomputers is an instructional program that enhances reading achievement and keyboard skills. The Program uses a phonetic approach to reading, with the microcomputer being an essential component of the instructional process. The computer does not replace the teacher in instructing, but rather provides opportunities for students to master skills through reinforced practice.

Students in grade 1, using the typewriter version of the program, demonstrate reading achievement scores, as measured by the CAT, that are higher than scores of students in a true control group, at a statistically significant level ($p<.01$).

Students in grade 3, using the microcomputer version of the program, demonstrate reading comprehension and speed-and-accuracy scores, as measured by the Gates-MacGinitie Reading Tests, that are higher than scores of students in a non-equivalent control group, at a statistically significant level ($p<.01$). Typewriting and computer usage skills were also statistically significant for the experimental group when compared to the control group. Visual and auditory memory skills improved significantly.

In a 1986 study significant growth ($p<.01$) was demonstrated in reading and language skills as measured by the Metropolitan Achievement Test, and in computer usage and typing, for the BLTM experimental students in grades one through six compared to a control group.

The program works whether one or more computers are available to a class or whether there is a computer lab in the school. Although the teacher teaches some skills, students are independent as they work at the computer.

The basic program which includes four disks costs $180.00.

Requirements A one- or two-day preparatory inservice education program conducted by a Reid Foundation staff person is desirable. The program includes lecture and practice sessions. It would be advantageous to the trainees to have an Apple IIe or IIc computer available. It is desired that data from pre and posttests are sent to the Developer-Demonstrator.

Services Awareness materials are available at no cost. Visitors are welcome by appointment at project site and additional sites in other states. Project staff are available to attend out-of-state awareness meetings. Training can be done at project site or at adopter sites. Awareness videotape is available for rental. At initial awareness sessions, time is provided without cost, and expenses are negotiated. Training and awareness can take place the same day.

Contact *Dr. Ethna R. Reid; 3310 South 2700 East, Salt Lake City, Utah 84109; (801) 486-5083.*

Developmental Funding: Local

JDRP No. 84-14 (3/26/84)

ECONOMIC LITERACY A computer-based financial management program which has two components—How to Make a Million and the New School Savings Program.

Audience How to Make a Million was approved for students in grades 6-8 and 10-12. The New School Savings Program was approved for grades 4-8.

Description HOW TO MAKE A MILLION (HMM)—HMM successfully teaches students sound principles of financial management, from learning how to save, to utilizing savings for investments. HMM provides students with an opportunity to apply their math and computer skills on a subject dear to their hearts, MONEY. The curriculum includes information on stocks, bonds, certificates of deposit, treasury bills, money market and mutual funds, and savings accounts—sorry no real estate! Generally, implementing teachers set aside part of a Friday during one semester and let the students make their investments until they MAKE A MILLION DOLLARS (simulated, of course)!

Materials include an Apple computer disk, a 48-page student booklet, a teacher's manual, duplicating masters, play money, and an "I Made a Million" certificate for those who DID! 35 sets of student materials come in the program kit.

THE NEW COMPUTERIZED SCHOOL SAVINGS PROGRAM (SS)—Remember when YOU saved money at school? Well, it's different now! Students, with the assistance of PTA volunteers, enter their deposit amount at a computer, pick up a receipt, give their money to the PTA volunteer and go back to work. The program is usually run before and after school and at lunch. After the last deposit, the bank picks up a record of all the deposits via its computer, which saves personnel time.

Materials include an Apple computer disk for deposits and modem transmission, a 24-page student booklet, a teacher's manual, and duplicating masters. 35 sets of student materials come in a kit.

Requirements Single teachers or groups of teachers can implement the programs. You should generally plan to use part of every Friday of a semester for HMM. The SS program lasts all year and continues yearly. Remember, a bank or financial institution is required to house the students' money.

Costs Individual kits with teacher and student materials for a class of 35 students are available for $299. The kits can be previewed for 30 days for the cost of UPS shipping. In addition, a workshop is available for a cost of $150., however, group rates can be arranged.

Services Awareness materials, training, and follow-up. Costs to be arranged.

Contact *Ms. Sherry Avena; 4095 173rd Place, S.E.; Bellevue, Washington 98088; (206) 746-0331.*

Developmental Funding: Private Sector Initiative

JDRP No. 85-6R (4/2/85

GLOSSARY OF MAJOR TERMS

GLOSSARY OF MAJOR TERMS

Application development - New software for management and instructional support to be used by school districts

BOCES - Board of Cooperative Educational Services

BRICC - BOCES Regional Instructional Computer Coordinators

BTA - Bureau of Technology Applications

CAI - Computer Assisted Instruction

CD-ROM - Compact disc - Read only memory

CEC - Cultural Education Center

CIMS - Comprehensive Instructional Management System

CMI - Computer Managed Instruction

CO-SERS - Cooperative Services through BOCES Applications

CoSy - Computer-based conferencing

CSIP - Comprehensive School Improvement Plan

Data - Information

Database Management - A systematic approach to storing, updating, and retrieving information stored as data items

Data Collection - The gathering of source data from one or more points to a central point as from school districts to the New York State Department

Decision Support Applications - Use of software to assist in the development of management and instructional decisions

EB - State Education Building

EBA - Education Building Annex

E-Mail - Electronic distribution of information

ERIC Clearinghouse - Educational Resources Information Center

ESL - English as a Second Language

FAX - Facsimile transmission - A hard copy reproduction

Graphics - Any computer-generated picture produced on a screen or paper

Hard Copy - A printed copy of machine output in readable form

Hardware - Physical equipment such as electronic, magnetic and mechanical devices

ICON - A graphic image used to refer to some object

Interactive Video - A video program and a computer program running in tandem under the control of the person in front of the screen. The user's actions, choices, and decisions genuinely affect the way in which the program unfolds.

Interface - A connection between two pieces of hardware or between two systems

JDRP - Joint Dissemination Review Panel

LAN - Local Area Network

Laserdisc - A high-density storage medium used as a means for storing large amounts of data

LEP - Limited English Proficient

Logo - A programming language designed primarily for school children developed at Massachusetts Institute of Technology by Seymour Papert

Log Off - To stop using a computer

Log On - To begin using a computer

Mainframe - A large computer with high speed operation and extensive storage facilities

Microcomputer - A small, low-cost computer that performs input, processing, storage, and output operations following a set of instructions

Minicomputer - A digital computer which is distinguished from a microcomputer by higher performance, more powerful instruction sets, a higher price, and a wide selection of available programming languages and operating systems

Modem - A device that provides the appropriate interface between a communications link and a data machine or system

MSP - Model Schools Program

NCTM - National Council of Teachers of Mathematics

NDN - National Diffusion Network

OCP - One Commerce Plaza

OTA - Office of Technology Assessment created in 1972 by the Congress of the United States

PROFS - Professional Office System - A program to provide a mechanism of electronic communication which transfers information among school districts

QUEST - Queries Unique and Easy for Students and Teachers - An interface menu easy for students and teachers to query

RAP - Regents Action Plan

RIC - Regional Information Center

SED - State Education Department

Simulation - To represent the function of one system by using a computer program

SIS - Student Information System

Software - A set of programs which causes a computer to carry out particular operations

Spreadsheet - An applications program which involves manipulation of rows and columns of numbers

System Maintenance - Monitoring and maintenance of databases, software, Statewide and regional networks

TAPU - Total Aidable Pupil Units

Telecommunications - Various systems, e.g. telephone networks which function to connect machines and people on a one-to-one/one-to-many basis for purposes of electronic mail and computer conferencing via telephone lines, satellites, or cable

Terminal - A keyboard/display device used to input programs and data to the computer and to receive outputs from the computer

TNT - Technology Network Ties

Tutorial - A software program designed to teach the user the intended skills

YAR - Youth-at-Risk